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Dimensions of social sensitivity in two types of learning-disabled children.

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DIMENSIONS OF SOCIAL SENSITIVITY IN TWO TYPES OF LEARNING-DISABLED CHILDREN

by

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ABSTRACT

The principal purpose of this study was to investigate whether two groups of learning-disabled children, classified according to their pattern of neuropsychological abilities, would differ in their performance on five exploratory tasks of social sensitivity. Seven children with primarily auditory-perceptual difficulties (Group 2) were compared to 7 children with primarily visual-spatial difficulties (Group 3) on their recognition of facial expressions and nonverbal gestures, and on their verbal labelling and explanations of feelings. The children ranged in age from 8 to 11 years, and their performances on these tasks were compared to a group of average-achieving children (Group 1). Statistically significant differences between groups were found for the combination of dependent variables (MANOVA F = 2.20, $p < .05$) as well as for the two tasks requiring verbal responses. The pattern of group performance was in the hypothesized direction on four of the five tasks. Discussion of the results first considered the limitations of the exploratory tasks, followed by comments regarding the composition of the two sub-types of learning-disabled children.

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CHAPTER I

INTRODUCTION

The purpose of this study was to investigate whether two groups of learning-disabled children, classified according to their pattern of neuropsychological abilities, would differ from one another in their ability to recognize and interpret various social stimuli. Children with primarily auditory-perceptual difficulties were compared to children with primarily visual-spatial difficulties on their interpretation of nonverbal communication, using pictures of facial expressions, hand gestures, and social situations. Their performances on these tasks were compared to a group of average-achieving children.

In this review of the relevant past research the following topics will be examined: 1) social and emotional difficulties of learning-disabled children, 2) the development of social cognition, with an emphasis on studies of recognition of facial expression, and 3) differences between the neuropsychological abilities of the two subtypes of learning-disabled children relevant to this study. The present study attempted to relate two previously distinct areas of research: the neuropsychology of learning disorders, and the development of social cognition.

Social and emotional difficulties of learning-disabled children

Throughout the long history of research on learning disabilities it has been assumed that a positive relationship exists between learning disorders and emotional problems (Connolly, 1971). However, there has

been little systematic study of the variables influencing the development of social and emotional problems. It is not clear which emotional reactions will be manifested under which learning conditions.

Bryan (1979) has provided an inclusive review of the recent, more systematic research concerning the social skills and social relationships of learning-disabled children. Researchers have attempted to elucidate social and emotional characteristics primarily through use of parent observations (Owen, Adams, Forrest, Stolz, & Fisher, 1971), teacher ratings (Bryan & McGrady, 1972; Keogh, Tchir, & Windeguth-Behn, 1974), peer ratings (Bryan, 1974a), and classroom observations of the interactions of learning-disabled children (Bryan & Wheeler, 1972; Bryan, 1974b). In comparison to their peers and siblings the learning-disabled children tend to be judged in more negative and rejecting terms. Bruinincks (1978) has also shown that these children are less accurate in perceiving their own social status, and they may therefore be less likely to modify their social behaviour. These studies have led Bryan & Bryan (1978) to conclude that:

> In summary, it appears that the learning-disabled child is confronted with a social world in which he is disliked, at worst, or ignored, at best, by his peers, classroom teachers, and even, perhaps, his parents (p . 139); learning disabled children do not suffer only from academic failure; many carry an additional burden of social failure. (p. 124)

The finding that the learning-disabled child is not as popular as his peers has implications for the child's future adult adjustment. Recent studies have demonstrated that peer acceptability is highly correlated with mental health in adult life, and Cartledge & Milburn (1978) go so far as to claim that a child's social adjustment is more important than his academic achievement in determining his level of

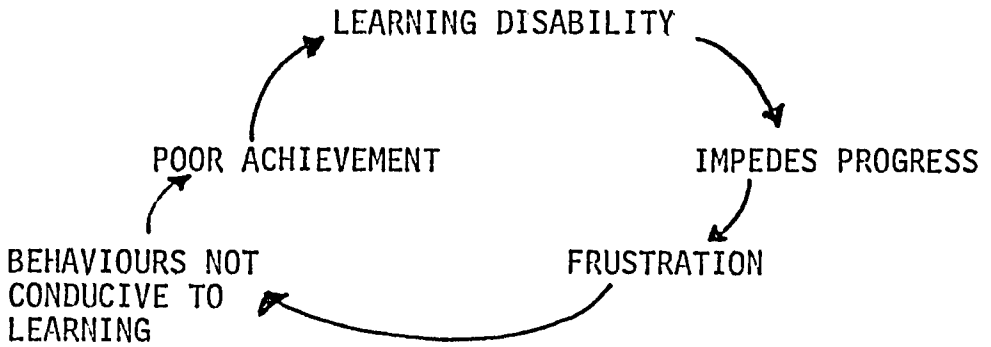
adult adjustment. Asher, Oden & Gottman (1976) reviewed follow-up studies of social status, and indicated that socially isolated children are more likely to have mental health problems in adult life. A follow-up study by Cowen, Pederson, Babijian, Izzo and Trost (1973) revealed that children regarded negatively by their peers were most likely to have mental health problems eleven years later. As the observational studies by Bryan and others have demonstrated the learning-disabled child's difficulties in social adjustment, the question of etiology remains the next consideration.

There are three viewpoints, each perhaps representing a different group of children, for resolving the question of etiology in the issue of whether emotional problems or learning problems are primary. Psychoanalytic theorists (i.e., Sylvester & Kunst, 1943) have largely been concerned with the group of children whose reading and school failure may be caused by emotional disturbance. The prerequisite perceptual and cognitive abilities for reading are considered to be intact for this group.

The second viewpoint considers the socio-emotional difficulties to result from the learning-disabled child's experience of constant failure, disapproval by adults, and rejection by peers. This viewpoint assumes that the child's emotional problems will disappear when his learning problems are overcome.

Attempts to classify children with learning problems into one of these two groups have not always proven successful, nor useful. A clear dichotomy does not exist between learning and emotional variables, for as Connolly (1971) has shown in the following

diagram, a 'vicious circle' often confuses the question of etiology in the case of the learning-disabled child. Furthermore, the



treatment for a particular child may not necessarily be dictated by the cause of his problem. For example, if a child is failing math because of emotional trauma, treatment will still have to consider remedial techniques appropriate for math problems, and not simply psychotherapy alone.

The present study approached the issue of etiology from a third viewpoint, namely, that both learning and social difficulties may be a function of deficiencies in cognitive abilities. In this connection, Bryan (1979) has stated:

> It is believed that problems in social relationships may be secondary effects of academic deficits for some children, but that for many children the difficulties in social relationships and social skills reflects the same problems which cause the child to have problems in the acquisition of academic skills. (Bryan, 1979, p. 6)

Furthermore, these "problems" may be influenced by the child's unique pattern of cerebral functioning. Sub-groups of learning-disabled children may vary in the nature and intensity of their socio-emotional problems, according to their cognitive strengths and weaknesses as measured by neuropsychological tests.

The research in etiology is beset by many methodological difficulties. There is much semantic confusion over terms such as "emotional adjustment" and "learning disability". It has proven difficult to quantify and measure emotional functioning. The many socio-emotional difficulties have not been classified into useful categories related to particular deficits and causes (Sampson, 1966). An important barrier to drawing conclusions from this research is the fact that learning-disabled children have been treated as a homogenous population in these studies.

The general research in etiology has indicated the importance of finding the cognitive or perceptual skills that may account for the learning-disabled child's academic and social failure. Recent attempts to specify these skills have focussed on the learning-disabled child's ability to perceive accurately affective states in other people. Non-verbal cues, such as facial expression, are an important source of knowledge concerning another's feelings (Mehrabian, 1971).

There have been three studies investigating the learning-disabled child's ability to interpret accurately the affective states of others. In a study by Wiig & Harris (1974), learning-disabled adolescents were found to be significantly less efficient at labelling the emotion expressed by a young female's videotaped nonverbal expressions of anger, embarrassment, and other emotions. However, it may be the case that the difficulty for the learning-disabled child on a task of this nature is not in the recognition and understanding of appropriate facial expression, but it may be in their difficulty in attaching a verbal label to a nonverbal expression.

Bachara (1976) used a format developed by Borke (1971) in

presenting stories to learning-disabled children, aged 7 to 12. The children selected the appropriate facial expression from a set of pictures of faces expressing happiness, anger, sadness, and fear. The learning-disabled children made significantly more errors than did the normals.

Finally, Bryan (1977) presented a film, known as the Pons (Rosenthal et al, 1977), of an adult female expressing various affects, and had subjects in Grades 3, 4, and 5 choose the statement that best described the scenario. Again, a significant difference was found between the learning-disabled subjects and the normals, with the learning-disabled group being less able to describe accurately the scenario.

These three studies differ in the amount and type of information presented to the subjects, and in the type of response demanded of the subjects. In two of the studies language abilities were implicated in the subjects' responses, and the third study required a nonverbal response (pointing). In the present study, these important variables - the verbal or nonverbal nature of both independent and dependent variables - were systematically manipulated.

In summary, the research on social and emotional difficulties of learning-disabled children suggests that this group may experience severe problems in the socio-emotional realm. As an attempt to specify reasons for their social failure recent studies have demonstrated that these children are less adequate in perceiving and interpreting the affective states of others. The present study investigated a neuropsychological basis for the learning-disabled child's deficiency in interpretation of social cues.

The development of social cognition

The following section of this review will briefly consider studies on social cognition, conducted in the area of developmental psychology. It is important to understand how the average child acquires skills and capabilities in the social realm to help explain why the learning-disabled child experiences difficulty in social situations. The area of social cognition has been reviewed by Shantz (1975) who states that:

> the area of social cognition refers to the child's intuitive or logical representation of others, that is, how he characterizes others and makes inferences about their covert, inner psychological experiences. (Shantz, 1975, p. 258)

The research category of social cognition most relevant to the present study is that which discusses the child's ability to infer what another person is feeling. Although there has been little agreement on a definition of empathy, it is generally accepted that empathy may have both cognitive and affective components. Different measures of empathy have been used, the most common involving a visual stimulus presented to the child, and a verbal response being required. Feshbach & Roe (1968) showed young children (aged 6 and 7) a series of slides depicting various social situations (i.e., attending a birthday party) and subjects were asked "What do you feel?" and "What does he/she feel?" Borke (1971) presented subjects (aged 3 to 8) with a picture of a social situation accompanied by a brief story. The children were asked to select the appropriate facial expression and place it on the story-child. Burns & Cavey (1957) presented pictures of situations wherein the child's facial expression conflicted with the situation in which he was portrayed (i.e., a young child smiling as a doctor is

about to poke him with a big needle). Preschoolers attended more to situational cues, and would disregard facial expression when stating the feeling of the story-child.

Results from various studies using these and other methods suggest that even three-year-olds may be able to recognize simple emotions, such as happiness, involved in familiar situations. Between the ages of 4 and 7 the child becomes increasingly more accurate in identifying situations that elicit fear, sadness and anger, while recognition of other emotions, such as surprise and scorn, develops still after age 7. Information on age norms varies according to several factors, such as the nature of the task and the specific emotional expressions being investigated. For example, Izard (1971) found that children aged 2 1/2 - 9 years could recognize expression of emotions (when subjects were shown a set of pictures and asked "Show me the one who is _____") far sooner than they could attach the correct verbal label to an expression (when asked "How is this person feeling?").

Affective perspective taking (the ability to recognize the appropriate facial expression for a given situation) should theoretically correlate with the child's skill at other perspective taking tasks. However, Kurdek & Rodgon (1975) report low correlations between children's perceptual perspective taking, their cognitive perspective taking, and their affective perspective taking, suggesting that the relationship between the development of social cognition and cognitive development is not clear.

Many assume that the child's ability to infer and interpret others' feelings adequately is related to his social adjustment. Piaget (1926) proposed that the child's ability to take another's

viewpoint will affect his social status or popularity. Although several researchers claim there is a positive relationship between social sensitivity and social adjustment, there is a scarcity of research exploring this issue. Izard (1971) has reported a significant positive relationship between a child's verbal emotion labelling score and his score on a social adjustment rating scale, in a pilot study with children aged 2 to 7 years. Testing with older children (aged 6 - 11) revealed a similar positive relationship, with correlations reaching statistical significance at ages 6, 9, and 11 (Izard, 1971). Recently it has been demonstrated that emotionally disturbed children are significantly less proficient than nondisturbed children at recognition of emotions in facial expressions (Zabel, 1979). However, due to the variety of measures used to study both adjustment and affective perspective taking, Shantz has stated that "the relation between social cognition and interpersonal behaviour may be one of the largest unexplored areas in developmental psychology today" (Shantz, 1975, p. 303).

In contrast to a research orientation emphasizing deviance and social maladjustment, researchers have recently focussed on a preventive approach, including the study of social competence (Kent & Rolf, 1979). Measures used for judging interpersonal competence (a concept often linked to social adjustment) have included teacher ratings, peer nominations, and different sociometric measures. In attempting to delineate variables affecting peer popularity, Hartup has noted that a willingness to give and receive friendly overtures, and a lack of withdrawal are positively related to peer acceptance (Hartup, 1970).

Several criticisms of the research on recognition of facial expression were relevant to the present study. Studies on the development of social inferences have usually required a verbal response by the child: for example, the child was often asked to state what another was feeling in a given situation. Thus, linguistic abilities, as well as cognitive abilities, have been reflected in the child's response. As we can assume that the majority of children classified as learning disabled exhibited at least a mild deficiency in verbal skills, a verbal response was likely not a valid measure of the child's cognitive ability to make social inferences. A second criticism of these methods is that the children were presented with isolated bits of information extracted from actual social situations (Rothenberg, 1970). Thus, motion pictures or filmed social episodes may be considered a more appropriate stimulus for measuring social cognition. A third difficulty in interpreting research on recognition of facial expression is that the amount of information (visual and verbal) presented to the child has varied. A fourth criticism is that the sex and age of the characters expressing the emotions in the task have not been controlled. A final problem is that the cognitive processes involved in making inferences from situational (visual) cues are not well delineated.

These studies on social cognition point to the importance of nonverbal cues in inferring another's affective perspective. Children's ability to use facial expressions to infer what another is feeling is a skill that improves with age. The learning-disabled child with visual-spatial difficulties will encounter problems at the most basic step of the inferential process - he may not be able to perceive

visually the situation adequately.

The area of psychological causality and interpersonal inference has received scant attention in the literature. Relevant to this discussion is mention of Flapan's (1968) study, in which she showed film episodes to 6, 9, and 12-year-olds, and categorized their spontaneous descriptions of the episodes, as well as their responses to questions about characters' feelings and intentions. The purpose of this study was to investigate "...children's ability to perceive or to make inferences about feelings, thoughts and intentions, and of their ability to interpret or explain sequences of behaviour that occur in interpersonal relationships." (Flapan, 1968). The results of this study revealed a developmental trend from explanations in situational terms (i.e., descriptions of overt actions) to explanations in psychological terms, to explanations in terms of interpersonal perceptions. A child with impaired visual-spatial skills may not be able to provide adequate descriptions and interpretations of the visual scene because of his difficulty in perceiving the visual stimulus, and the child with auditory difficulties may not provide adequate interpretations due to a deficit in verbal expressive skills.

Thus, it appears to be important and useful to study the prerequisite cognitive and perceptual skills involved in such tasks of social inference. In the present study learning-disabled children were classified according to their neuropsychological profile into one of two groups, in order to compare their performance on tasks of social sensitivity.

Sub-types of learning-disabled children

Studies investigating the neuropsychology of learning disorders recently isolated the two sub-types of learning-disabled children used in the present study. A study by Rourke & Finlayson (1978) classified three sub-types of learning-disabled children according to their pattern of performance on the Reading, Spelling and Arithmetic sub-tests of the Wide Range Achievement Test (Jastak & Jastak, 1965). Children in Group 1 were uniformly deficient in reading, spelling and arithmetic. Children in Group 2 were relatively adept at arithmetic, as compared to their performance in reading and spelling; a third group (Group 3) was composed of children whose reading and spelling performances were average or above, but whose arithmetic performance was relatively deficient. The performance of Group 3 was superior to that of Group 2 on measures of verbal and auditory-perceptual abilities; the performance of Group 2 was superior to that of Group 3 on visual-perceptual and visual-spatial abilities. From the test results it was inferred that children in Group 3 were impaired in the abilities ordinarily thought to be subserved primarily by the right cerebral hemisphere, whereas the children in Group 2 were impaired in abilities ordinarily thought to be subserved primarily by the left cerebral hemisphere. Rourke & Strang (1978) found that Group 3 subjects showed impaired performance on complex psychomotor measures and on a composite tactile-perceptual measure, relative to the performance of Group 2 children.

Two earlier studies by Rourke and his colleagues (Rourke & Telegdy, 1971; Rourke, Young & Flewelling, 1971) classified three groups of learning-disabled children on the basis of the relationship

between their Verbal IQ and Performance IQ on the Wechsler Intelligence Scale for Children (Wechsler, 1949). The PIQ of children in Group 1 (HP - LV) was at least 10 points higher than their VIQ; Group 2 (V= P) consisted of subjects with VIQ and PIQ within 4 points of each other; and Group 3 (HV - LP) children had VIQ values at least 10 points higher than their PIQ. Children in Group 3 (HV - LP) showed clear superiority on most measures of verbal and auditory-perceptual abilities, and children in Group 1 (HP - LV) were clearly superior on those tasks that primarily involved visual-perceptual skills. Furthermore, this group showed clear superiority on most measures of complex motor and psychomotor abilities.

The present study used a combination of criteria from these four studies to specify two sub-types of learning disabilities: a group of learning-disabled children with primarily auditory-perceptual difficulties (Group 2), and a group of children with primarily visual-spatial and visual-perceptual disabilities (Group 3).

The children classified in Group 3 were considered to exhibit a nonverbal learning disability. Johnson & Myklebust (1967) discussed their clinical observations on this sub-type they classified as the nonverbal disorders of learning. There is a paucity of research on this particular group of learning-disabled children, as their deficits are much less common than the disabilities of dyslexic children. Myklebust (1975) has suggested that nonverbal disturbances may ultimately be more debilitating for a child, as he may be unable to adequately develop social perception ("the child's ability, or lack of ability, to understand his social environment, especially in terms of his own behaviour" (Myklebust, 1975, p. 86). Furthermore, these authors

suggest that social imperception and other nonverbal disturbances are related to dysfunctions principally on the right cerebral hemisphere.

A recent paper on this subject suggests that the child with a nonverbal learning disability will likely exhibit the following characteristics: his reading (word recognition), spelling and speech abilities will be at an average or above-average level; he will exhibit relatively poor Arithmetic abilities; his WISC Verbal IQ will be at least average, but his Performance IQ will be below average; he will exhibit bilateral tactile-perceptual deficits and difficulties in complex psychomotor activity; and he will show fairly consistent and profound impairment on tasks of a visual-spatial nature (Strang, 1979). Several factors may contribute to this child's misunderstanding or lack of understanding of his social world; he may be unable to understand the nonverbal gestures of others, he may lack basic understanding of physical causality due to inadequate sensory-motor experience, he may use inappropriate gestures and facial expressions to accompany his own remarks, and he may be unable to generate adequate visual images in association with familiar sounds (Strang, 1979). This child simply may not receive the type of visual-perceptual and visual-spatial experience thought to be important for social development.

The posterior right cerebral hemisphere has also been implicated in neuropsychological research on facial recognition and prosopagnosia using adult subjects. Studies using the tachistoscopic paradigm with normals show consistent left visual field superiority in accuracy of facial recognition. Warrington & James (1967) suggest that recognition and labelling of facial expression involve two different cerebral processes - patients with right hemisphere lesions made errors in

recognition, whereas patients with left hemisphere lesions primarily made errors in naming the expression.

Hypotheses

Bryan has stated that no differences in social adjustment have yet been found between children with learning disabilities, and states that:

> it is not too likely in the immediate future that we will be able to point to a particular academic deficit and say that it is the skill area most likely to be associated with social problems. At this point it is clearly speculation as to which learning disabled child has the social skills problem. (Bryan, 1979, p. 41)

The present study was designed to investigate this issue, by examining differences in social sensitivity between specific types of learning-disabled children.

The performance of the learning-disabled child on social sensitivity tasks was expected to vary according to the nature of the child's particular disability and according to the verbal or nonverbal nature of the task. Five different tasks were used to assess children's social sensitivity; three of the tasks required a nonverbal response by the subjects (Tasks A, B, and C), and two of the tasks required verbal responses (Tasks D and E). Task A involved recognition of facial expressions, Task B involved recognition of nonverbal gestures, Task C involved matching of facial expressions, Task D involved the verbal labelling of feelings, and Task E involved the verbal explanations of feelings.

The following hypotheses were investigated: Hypothesis 1: It was expected that children with visual-spatial difficulties (Group 3) would show a marked impairment of ability to recognize and match

facial expressions in comparison to the performance of normal children (Group 1) and children with verbal disabilities (Group 2). Thus, on Tasks A and C the expected pattern of group performance was in the direction Group 1 > Group 2 > Group 3.

Hypothesis 2: It was expected that children with visual-spatial difficulties (Group 3) would show a marked deficiency in ability to interpret nonverbal gestures in comparison to the performance of normal children (Group 1) and children with verbal disabilities (Group 2). Thus, on Task B the expected pattern of group performance was in the direction Group 1 > Group 2 > Group 3.

Hypothesis 3: It was expected that children with verbal disabilities (Group 2), would show a marked deficiency in ability to label feelings and provide explanations for the feelings in comparison to the performance of normal children (Group 1). Children with visual-spatial difficulties (Group 3) were also expected to be deficient in their verbal explanations in comparison to the performance of normal children, and to a less significant degree than the children with verbal disabilities. Thus, on Tasks D and E the expected pattern of group performance was in the direction Group 1 > Group 3 > Group 2.

CHAPTER II

METHOD

SUBJECTS

Group 1 Subjects and Selection Procedure

The research committee of the Essex County Board of Education granted permission to conduct the study. The principal of Sandwich West Public School Unit agreed to have children in his school participate, and the guidance counsellor of this school co-ordinated the project. The school requested that a summary of the study be sent to them, as well as specific information concerning any child that deviated significantly from the norm. The guidance counsellor was asked to select children who were average achievers, had never failed a grade, and spoke English in the home. The School Psychometrist for the Essex County Board verified that none of the selected children had been referred for an emotional and/or learning problem. The four participating teachers were asked to complete a simple unstandardized form indicating whether the selected children were performing at an average, below-average or above-average level (in comparison to their classmates) in Reading, Spelling, and Arithmetic (Appendix A). Twenty-two permission slips (Appendix B) were distributed, and twenty slips were returned stating parental consent.

These 20 children were tested during the week of June 11 - 15, 1979. The author escorted participants individually from their classroom to a quiet testing room with child-size furniture.

Each child was told the nature of the testing and was asked to give consent before testing proceeded. Testing required approximately 1 hour, 15 minutes per child. At the end of the testing session each child was thanked and given a coloured felt pen.

The 20 subjects ranged in age from 102 to 148 months (M = 127.15, SD = 15.42), with an average age of approximately 10 years, 7 months. Nine of the children were female; eleven were male. Six of the children were in Grade 3, 11 were in Grade 5, and 3 were in Grade 6.

Seven of these 20 children were selected as the final Group 1 subjects. Selection criteria were: 1) Wide Range Achievement Test (W.R.A.T.) Reading percentile score $\geq$ 45, 2) W.R.A.T. Spelling percentile score $\geq$ 35, 3) W.R.A.T. Arithmetic percentile score $\geq$ 30, 4) Wechsler Intelligence Scale for Children (W.I.S.C.) Prorated FSIQ $\geq$ 90, 5) W.I.S.C. Prorated VIQ $\geq$ 90, 6) W.I.S.C. Prorated PIQ $\geq$ 90, 7) W.I.S.C. Vocabulary scaled score $\geq$ 8, 8) W.I.S.C. Object Assembly scaled score $\geq$ 8, 9) a teacher rating of at least "average" in Reading, Spelling and Arithmetic. Seven of the 12 children who met these criteria were selected as the closest matched with the seven Group 3 subjects on the basis of age, sex, and W.I.S.C. FSIQ.

The seven Group 1 subjects ranged in age from 102 to 134 months (M = 122.86, SD = 12.58), with an average age of approximately 10 years, 3 months. Four of the children were female; 3 were male. A comparison of mean scores between the selected Group 1 children and the twenty control group children tested is presented in Table 1.

Groups 2 and 3 - Selection Procedure

The learning-disabled subjects were selected from approximately

TABLE I

MEAN SCORES OF SELECTED GROUP I CHILDREN AND ALL CONTROL GROUP CHILDREN

Variable	Group 1 n = 7	Control group n = 20
Age (in months)	122.86	127.15
WRAT Reading percentile score	65.57	62.5
WRAT Spelling percentile score	58.14	56.4
WRAT Arithmetic percentile score	41.0	37.45
WISC Full Scale IQ (Prorated)	107.71	104.95
WISC Verbal IQ (Prorated)	109.14	104.7
WISC Performance IQ (Prorated)	105.14	104.7

700 case records of children referred to the Neuropsychology Unit, Regional Children's Centre, Windsor Western Hospital Centre. In all cases, the subjects had been referred because of a "learning" and/or a "perceptual" problem to which it was thought that cerebral dysfunction might be a contributing factor. The subjects had received extensive neuropsychological assessments within two years previous to the time of the study. A comprehensive description of the assessment procedures employed can be found in Rourke (1975, 1976a). According to the working definition adopted by Rourke (1976a) a learning disability is seen as a retardation or delayed development in one or more of the processes of speech, language, reading, writing, arithmetic, or other school subjects which results from factors other than emotional disturbance, mental retardation, sensory deprivation, or cultural or instructional factors.

Twenty-eight learning-disabled children were tested for the purposes of this study during the months of June, July, and August, 1979.

Two psychometrists from the Neuropsychology Unit, as well as the author, contacted the majority of the selected learning-disabled subjects by telephone. The nature of the study was briefly explained to the parents, and their child's participation was requested. Most parents were offered an interview with Neuropsychology Unit personnel to clarify any questions they had concerning their child's previous neuropsychological assessment and/or their child's learning difficulties. If the parents gave their verbal consent an appointment time was arranged for testing. The children and their parents were met by the author in the lobby of the Regional Children's Centre, and were then brought to an interview room where the test procedure was

explained to the parents, and relevant questions were answered. At the end of the testing session the child was brought to his/her parents in the lobby. The family members were thanked for their participation and were informed they would receive a letter providing feedback on test results when the study was completed.

The exceptions to this general procedure were as follows: 1) three of the learning-disabled children were contacted through and tested at the Children's Achievement Centre, where they were elementary school pupils; 2) two children were contacted through the Student Services Officer, Kent County Roman Catholic Separate School Board, and were tested at their respective schools in Wallaceburg, Ontario; 3) four children were initially contacted by a letter explaining the purpose of the study and requesting their participation (Appendix C); 4) special arrangements were made to test two of the learning-disabled children as they attended their treatment program at the Regional Children's Centre.

Of the 31 testing appointments set up, one family cancelled and two failed to arrive for their appointments. Two parents requested and received interviews with Neuropsychology personnel.

All Group 2 and 3 children were selected on the basis of their pattern of test performance on the neuropsychological assessment. The complete W.R.A.T. and five W.I.S.C. sub-tests were readministered in the present study to ascertain that the child's pattern of performance remained the same as on the previous neuropsychological assessment. The five W.I.S.C. sub-tests administered were Comprehension, Arithmetic, Vocabulary, Picture Arrangement and Object Assembly. Glasser and Zimmerman (1967) reviewed 20 abbreviated forms of the

W.I.S.C., and stated that a brief form should yield at least a .90 correlation with the W.I.S.C. Full Scale IQ. The present abbreviated form yields a .94 correlation with the Full Scale IQ at age 7 1/2, a .96 correlation at age 10 1/2, and a .96 correlation at age 13 1/2.

Group 2 Subjects

The 15 children who were tested as potential Group 2 subjects ranged in age from 99 to 144 months (M = 117.73, SD = 14.39). Six of the children were female; nine were male.

Seven of these 15 children were selected as the final Group 2 subjects. Selection criteria were: 1) W.R.A.T. Reading percentile score $\leq$ 20, 2) W.R.A.T. Spelling percentile score $\leq$ 20, 3) W.I.S.C. Verbal IQ $\leq$ 90, 4) W.I.S.C Full Scale IQ $\geq$ 85, 5) W.I.S.C. Performance IQ $-$ W.I.S.C. Verbal IQ $\geq$ 10, 6) W.I.S.C. Vocabulary score $\leq$ 8, 7) W.I.S.C. Object Assembly scaled score $\geq$ 10. At least two of the following four criteria also needed to be met for selection: 8) an average score on the Target Test, 9) an average score on the Tactual Performance Test (TPT) - both hands, 10) average score on the TPT - left hand, 11) average TPT Localization score. Children were excluded from the study if their neuropsychological formulation indicated the child's pattern of functioning was "contraindicative" of dysfunction at the level of the cerebral hemispheres and that emotional problems were contributory to the child's learning problem.

Previous studies (Rourke & Telegdy, 1971; Rourke & Finlayson, 1978; Rourke & Strang, 1978) supported the use of these eleven criteria as a selection basis of learning-disabled children with predominantly verbal and auditory-perceptual difficulties.

The seven Group 2 subjects ranged in age from 101 to 143 months (M = 119.71, SD = 13.91), with an average age of approximately 10 years, 0 months. Two of the children were female; five were male. All children showed right-hand dominance established, and all children were free of primary psychiatric disturbance. Three of the children came from single-parent homes, and one spoke a language other than English in the home.

Group 3 Subjects

Thirteen children were tested as potential Group 3 subjects, and ranged in age from 97 to 188 months (M = 120.15, SD = 22.71). Six of the children were female; seven were male.

Selection criteria were based on the results of previous studies (Rourke & Telegdy, 1971; Rourke & Finlayson, 1978; Rourke & Strang, 1978) investigating the test performances of children with visual-perceptual and visual-spatial difficulties. Selection criteria were: 1) W.R.A.T. Arithmetic percentile score $\leq$ 25, 2) W.I.S.C. Performance IQ $\leq$ 90, 3) W.I.S.C. Full Scale IQ $\geq$ 85, 4) W.I.S.C. Verbal IQ - W.I.S.C. Performance IQ $\geq$ 10, 5) W.I.S.C. Vocabulary scaled score $\geq$ 9, 6) W.I.S.C. Object Assembly scaled score $\leq$ 8. At least two of the following four criteria needed to be met: 7) Target Test score at least 1 SD below average, 8) TPT Both hands score at least 1 SD below average, 9) TPT Left hand score at least 1 SD below average, 10) TPT Localization score at least 1 SD below average. Children were excluded from the study if the neuropsychological formulation indicated their pattern of test functioning was "contraindicative" of dysfunction at the level of the cerebral hemispheres and that emotional problems

were contributory to their learning problem.

The seven Group 3 subjects ranged in age from 104 to 126 months (M = 113.57, SD = 9.25), with an average age of approximately 9 years, 6 months. Four of the children were female; three were male. Six children showed right-hand dominance established; one child was left-handed in writing but showed a right-hand preference on other tasks. All of the children were free of primary psychiatric disturbance. One child came from a single-parent home and all of the children spoke English in the home.

The means and standard deviations for the selection criteria for subjects in each of the three groups are presented in Table 2.

MEASURES

Pilot testing was carried out with a random sample of learning-disabled children in May, 1979. Ten children ranging in age from 100 to 135 months (M = 111.9) were tested on the same day they received a neuropsychological assessment at the Regional Children's Centre. Four children were female; six were male. Testing required approximately 20 minutes. The purpose of the pilot testing was to derive an estimate of the difficulty level of the constructed tasks, and to make modifications of the tasks based on this information. In general, the test performances of the pilot group were quite good, and the tasks were subsequently modified to increase their level of difficulty (i.e., to raise the ceilings of the tests).

Five measures were designed and employed to investigate differences in social sensitivity between Groups 1, 2 and 3. Tasks varied according to their modality of stimulus presentation: two of the tasks were

TABLE 2

MEANS AND STANDARD DEVIATIONS FOR SELECTION VARIABLES

Variable	Group (n = 7 for each)		
	1	2	3
Sex			
M	3	5	3
F	4	2	4
Age (in months)			
M	122.86	119.71	113.57
SD	12.57	13.91	9.25
WRAT Reading % score			
M	65.57	9.00	41.57
SD	15.05	3.05	36.70
WRAT Spelling % score			
M	58.14	9.85	28.28
SD	11.87	6.47	32.68
WRAT Arithmetic % score			
M	41.00	21.57	18.00
SD	16.21	11.44	4.83
WISC Verbal IQ			
M	109.14	83.28	99.00
SD	9.82	4.95	5.16
WISC Performance IQ			
M	105.14	106.14	81.14
SD	9.42	10.71	4.14
WISC Full Scale IQ			
M	107.71	93.57	89.71
SD	8.18	7.39	4.46
WISC Vocabulary scaled score			
M	11.57	8.14	10.85
SD	2.23	1.06	1.86
WISC Object Assembly scaled score			
M	11.43	12.00	6.57
SD	1.90	1.29	1.27
Target Test (N correct)			
M		13.43	7.86
SD		4.58	4.02
Tactual Performance Test - Both (sec.)			
M		1.44	4.12
SD		.55	3.17
Tactual Performance Test - Left (sec.)			
M		2.75	6.98
SD		1.24	3.14
Tactual Performance Test - Localization (N correct)			
M		2.71	1.71
SD		1.25	1.38

visual presentations, two tasks involved verbal presentations, and one task involved a combined verbal-visual presentation. Tasks also varied according to the nature of the response required: two of the tasks required a verbal response, and three tasks required a visual-motor response from the subjects.

The visual stimuli used in the present study were selected from materials in the 'Toward Affective Development' (T.A.D.) kit (Dupont, Gardner, & Brody, 1974), an educational tool designed to further children's social and affective growth. The kit was designed for use by 8 to 12-year-old children in the regular classroom setting. The advantages of the T.A.D. kit pictures over other stimuli previously used in studies of facial recognition (e.g., Borke, 1971) were that the pictures were generally more colourful, detailed and realistic. Three sets of pictures were used: one involved individual children's faces from the neck up, another set were sketches of individual children's bodies in various gestures, and the final set were coloured pictures of children involved in various social interactions. For the purposes of testing the size of the pictures in the first two sets were reduced from their original size, and minor modifications were performed on the drawings to make them more similar in their sex characteristics. The verbal descriptions of the facial expressions were taken from the T.A.D. kit manual.

The standard introduction to the five tasks was: Now I am going to show you some pictures and ask you some questions. I just want you to try to do your best.

TASK A: Recognition of Facial Expression

The purpose of this task was to investigate children's ability to select an appropriate facial expression on the basis of information

provided in a verbal statement. Each child was presented with a matrix of six pictures - in the top row were pictures of a young boy's face expressing the emotions of surprise, disgust (usually interpreted as anger by younger children), and apprehension; in the bottom row were similar pictures of the emotions sadness, fear and happiness. The children were then read 16 stories, with four stories relevant to each of four primary emotions: surprise, anger, sadness and happiness. The child's task was to point to the facial expression appropriate to the story character's specified experience. After this nonverbal task the child's understanding was further tested by asking him to specify verbal labels for each of the six emotions. The child was asked to explain his reasons for his choice on four of the stories, and his flexibility in assigning facial expressions was probed. These verbal responses were not scored.

The task instructions and stories for Task A were as follows: <u>These are pictures of Johnny when he's feeling different ways. I'm going to tell you some stories about Johnny and I want you to show me how you think Johnny feels in each story. I want you to point to the face that best shows how he feels. I don't want you to tell me anything; I want you to just point</u>.

1. Show me how Johnny would feel if he got to eat his favourite food for supper.
2. Show me how Johnny would feel if he was showing a good report card to his mother.
3. Show me how Johnny would feel if his good friend came over and asked him to come out and play.

4. Show me how Johnny would feel if he was given a badge for being the best baseball player on his team.

5. Show me how Johnny would feel if he fell and hurt himself.

6. Show me how Johnny would feel if someone he liked very much had to move away.

7. Show me how Johnny would feel if everyone in his class got asked to Bobby's birthday party except him.

8. Show me how Johnny would feel if he came home and his mother told him his pet cat had died.

9. Show me how Johnny would feel if his mother just told him that she would take him to the circus.

10. Show me how Johnny would feel if he just got a new toy as a birthday gift.

11. Show me how Johnny would feel if he came home from school and found that his dog had had puppies while he was gone.

12. Show me how Johnny would feel if he was walking through the woods and suddenly saw a beautiful butterfly.

13. Show me how Johnny would feel if his mother told him to eat some food that he really didn't like.

14. Show me how Johnny would feel if his brother took his toy truck and smashed it all to pieces.

15. Show me how Johnny would feel if he went into the kitchen and smelled something rotten.

16. Show me how Johnny would feel if one of the boys in the school yard started a fight with him.

Testing the Limits:

Now, can you tell me how Johnny feels in each picture? How does

Johnny feel in this picture? (examiner points to each picture)

1. You said that Johnny would feel this way (points to S's response) if he got to eat his favourite food for dinner. What is that feeling? Why do you think he would feel that way? Could he feel this way (points to angry face) in this situation? Why (not)?

2. You said that Johnny would feel this way (points to S's response) if he fell and hurt himself. What is that feeling? Why do you think he would feel that way? Could he feel this way (points to happy face) in this situation? Why (not)?

3. You said that Johnny would feel this way (points to S's response) if his mother just told him she would take him to the circus. What is that feeling? Why do you think he would feel that way? Could he feel this way (points to sad face) in this situation? Why (not)?

4. You said that Johnny would feel this way (points to S's response) if his mother told him to eat some food that he really didn't like. What is that feeling? Why do you think that he would feel that way? Could he feel this way (points to surprised face) in this situation? Why (not)?

TASK B: Recognition of Nonverbal Gestures

The purpose of this task was to investigate children's ability to select an appropriate nonverbal gesture on the basis of information provided in a verbal story. Each child was presented with a matrix of six pictures of a child in the following nonverbal gestures - in the top row were pictures of a young child rubbing his stomach, waving his hand, and clenching his fist; in the bottom row the child was tapping his fingers on a desk, shaking a forefinger and stretching out his hand.

Only the silhouette of the child's body was shown in the pictures, with the face and body being coloured in a uniform shade of grey, while the arm and hand were contrasted in white. The children were then read six stories, with two stories each relevant to three gestures: waving a hand, clenching a fist, and shaking a forefinger. The subjects were not presented with verbal labels or descriptions of the gesture. The story required the subject to infer the next action in the story by pointing to the nonverbal gesture appropriate to the story character's specified experience. After this nonverbal task the child's understanding was further tested by asking him to provide a verbal label or description for each nonverbal gesture. These verbal responses were not scored.

The task instructions and stories for Task B were as follows:
<u>These are pictures of children trying to say something with their hand. I'm going to read you stories about different boys, but I won't tell you what happens at the very end of the story. I want you to guess. I want you to point to the picture that shows what the boy might be doing at the end of the story.</u>

1. When Ron's mother left to go shopping she told him to stay at home and babysit his younger brother, Michael. Michael was upstairs and started throwing his toys around the room like he wasn't supposed to do. Ron went upstairs. Show me what Ron might do. Point to the picture that shows what Ron might do.

2. Paul was in a Grade 4 class. One day his teacher asked him to help another boy called Bobby with his spelling assignment. Bobby made a big mistake. Show me what Paul might do. Point to the picture that shows what Paul might do.

3. Bill was walking home from school one day when some younger children

on the street started calling him names and throwing stones at him. Show me what Bill might do. Point to the picture that shows what Bill might do.

4. Tony was in his living room playing when he heard a lot of noise outside. He looked out the window and saw that some boys were punching his younger sister Joan. He ran out of the house. Show me what Tony might do. Point to the picture that shows what Tony might do.

5. Peter was inside his house watching TV. He wanted to go outside and play. He heard some boys that he liked from school walking by his house, and he ran to open the front door. Show me what Peter might do. Point to the picture that shows what Peter might do.

6. Gerry was playing soccer on his school team. One time his father came to watch the game and Gerry was really happy. He wanted to be sure his father noticed where he was on the field. Show me what Gerry might do. Point to the picture that shows what Gerry might do.

Testing the Limits:

Now I want you to tell me what each of the boys in these pictures is saying. What is he saying? (examiner points to each picture)

TASK C: Matching of Facial Expression

The purpose of this task was to investigate children's ability to select an appropriate facial expression on the basis of information provided in a verbal story, in combination with visual information. Each child was presented with four large coloured pictures of children involved in social interactions. Each picture was presented separately and beside the picture were placed six small pictures of a child's face expressing the emotions of anger, fear, happiness, sadness, and two "neutral" faces. The pictures were placed in the following order:

neutral, happy, fear (top row); sad, angry and neutral (bottom row). The faces of the children in the large pictures were covered. The subjects were presented with a story concerning each large picture. The subject's task was to choose the appropriate facial expression for the main character and to place this face on the large picture.

The task instructions and stories for Task C were as follows: I'm going to tell you a story about this picture. After I tell you, I want you to find the face that shows how this boy feels (examiner points to main character) and then put the face on the picture.

1. Bobby was walking home from school with his sister Jane. All of a sudden Bill ran up and started punching Bobby and calling him names. Bobby started pushing Bill and fighting back. Show me how Bobby would feel. Pick up the face that shows how Bobby would feel, and put it on the picture.

2. One day John, Mike and Doug were playing beside their school. Mike had stolen some matches and a cigarette from his home. He tried to light the cigarette, and threw the match into the grass. The grass started burning and the boys tried to run away. Show me how Mike would feel. Pick up the face that shows how Mike would feel, and put it on the picture.

3. Jim and his friends were standing in the park talking after playing a baseball game. Tony and his family had just moved to the neighbourhood, and Tony didn't have any friends. Tony asked Jim if he could play baseball with the boys. Jim looked at him and said "No". Show me how Tony would feel. Pick up the face that shows how Tony would feel, and put it on the picture.

4. Marty was the captain of the neighbourhood baseball team. His

team had practiced hard all summer. Today they played the final game in the tournament, and Marty's team came out in first place. Show me how Marty would feel. Pick up the face that shows how Marty would feel, and put it on the picture.

TASK D: Labelling of Feeling

The purpose of this task was to investigate children's ability to describe feelings from visual stimuli of social situations. Each child was presented with two large coloured pictures of children involved in social situations. The first scene was of a woman leaving a burning house while children on the street stood frightened watching. The second was a classroom scene, with two boys passing notes at the back of the class. The subjects were asked to state the feelings of three characters in each picture.

TASK E: Explanation of Feeling

The purpose of this task was to investigate children's ability to make inferences about the reasons for feelings that occur in social situations from solely visual stimuli. The visual stimuli were identical to those used in Task D. Subjects were asked to provide an explanation of each character's feeling. A question concerning the action of the character was not scored, and was included to serve as a lead-up question to Tasks D and E.

The task instructions and questions for Tasks D and E were as follows:

I want you to look at this picture for a few minutes, and think about what might be happening in the picture. Then I'll ask you some questions.

1. What is he (examiner points) doing? What is he feeling? Why?
2. What is he (examiner points) doing? What is he feeling? Why?
3. What is she (examiner points) doing? What is she feeling? Why?

Now I want you to look at this picture for a few minutes, and think about what might be happening in the picture. Then I'll ask you some questions.

4. What is he (examiner points) doing? What is he feeling? Why?
5. What is he (examiner points) doing? What is he feeling? Why?
6. What is she (examiner points) doing? What is she feeling? Why?

C. SCORING CRITERIA

The nonverbal responses for Tasks A, B, and C were scored either appropriate (1) or inappropriate (0). The verbal responses for Tasks D and E received a score of 2, 1 or 0, according to the nature of the response. The specific scoring criteria for each Task are presented below.

TASK A: Recognition of Facial Expression

Score:

Question 1) 1 - happy, 0 - other

2) "

3) "

Question 4) 1 - happy, 0 - other

5) 1 - sad, 0 - other

6) "

7) "

8) "

9) 1 - surprise, 0 - other

10) "

11) "

12) "

13) 1 - anger OR apprehension, 0 - other

14) "

15) "

16) "

TASK B: Recognition of Nonverbal Gestures

Score:

Question 1) 1 - no (shaking finger), 0 - other

2) "

3) 1 - mad (clenched fist), 0 - other

4) "

5) 1 - hi (hand waving), 0 - other

6) "

TASK C: Matching of Facial Expression

Score:

Question 1) 1 - angry, 0 - other

2) 1 - afraid, 0 - other

3) 1 - sad, 0 - other

4) 1 - happy, 0 - other

Specific scoring criteria for Tasks D and E are found in Appendix D.

TASK D: Labelling of Feeling

Score:

Question 1) 2 - a dominant negative emotion

1 - any other appropriate negative emotion

0 - other

2) "

3) "

4) "

5) "

6) "

TASK E: Explanation of Feeling

Score:

Question 1) 2 - an explanation of feeling in psychological or interpersonal terms (ex. "he's worried because the baby might be hurt")

1 - an explanation of feeling in situational terms (ex. "he's worried because the house is on fire")

0 - other, "I don't know"

2) "

3) "

4) "

5) "

6) "

TOTAL: The maximum total score for the five Tasks of social sensitivity was 50 points.

D. EXPERIMENTAL PROCEDURE

The order of task presentation was randomly varied across subjects. The order to story presentation in Tasks A, B, and C was randomly varied, as was the order of picture presentation and questions in Tasks D and E.

The rate of testing varied slightly between the three groups, with the most time required for Group 2 subjects. Instructions were occasionally repeated for subjects in this group, and the pace and manner of testing was relaxed to ensure optimum performance from the child.

The W.R.A.T. Spelling, Reading and Arithmetic tests were administered first, followed by administration of the five W.I.S.C. sub-tests. The five dependent variables (Tasks A, B, C, D, and E) were administered last. The testing session for children in Groups 2 and 3 lasted approximately 1 1/2 hours.

A complete set of test materials is presented in Appendix E. The summary sheet used to condense information is presented in Appendix F.

CHAPTER III

RESULTS

The statistical models for the multivariate analyses were constructed according to Harris (1975) and analyzed using the Statistical Analysis System designed by Barr, Goodnight, Sall & Helwig (1979). The statistical model for the item analysis was constructed according to Jackson (1967) and analyzed using the TESTSTAT Program (Morf, Unpublished, University of Windsor).

Investigation of Hypotheses

The performance of children in Groups 1, 2, and 3 was compared on the five dependent variables: 1) Recognition of Facial Expression (Task A), 2) Recognition of Nonverbal Gestures (Task B), 3) Matching of Facial Expression (Task C), 4) Labelling of Feeling (Task D), 5) Explanation of Feeling (Task E). The means and standard deviations for the dependent measures are presented in Table 3.

A one-way Multivariate Analysis of Variance (MANOVA) for Group across the five dependent variables yielded a significant main effect for Group ($F = 2.20$, $p < .05$). Task A was excluded from subsequent MANOVA, ANOVA and covariate analyses because the correlation matrix among the five dependent variables revealed that Task A correlated positively with the other four tasks, while the MANOVA matrix revealed that the value of Task A on the discriminant vector was comparatively small (.005). The one-way MANOVA for Group computed on the remaining

four dependent variables yielded a significant main effect for Group (F = 2.96, $p < .02$). This indicates a considerable improvement in discriminability between groups when Task A is eliminated.

One-way analyses of variance for Tasks B and C were non-significant. However, the pattern of group performance was in the expected direction (Group 1 > Group 2 > Group 3). Thus, of the learning disabled groups the Group 2 children tended to do better than the Group 3 children on tasks requiring nonverbal responses.

On tasks requiring a verbal response the pattern of group performance was also in the expected direction (Group 1 > Group 3 > Group 2). One-way analyses of variance yielded a significant Group effect for Task D (F = 5.75, $p < .01$) and Task E (F = 3.89, $p < .04$).

Simple effects across Group were tested using the Duncan multiple-range test and the Tukey A procedure. It was revealed that on Task D Group 2 differed significantly from Group 1 at the .01 level. On Task E Groups 1 and 2 differed significantly from one another at the .05 level. Group 3 did not differ significantly from either Group 1 or Group 2 on Tasks D and E.

The directions of effect and levels of significance for the univariate and simple effects analyses are presented in Table 3.

In this study an attempt was made to control for sex and age effects. However, due to restrictions in subject availability the sex of subjects was not evenly distributed across groups. Furthermore, it was thought that the chronological age of children may influence their scores on the dependent measures. For these reasons univariate and multivariate analyses of covariance including sex and age as covariates were computed. The results of the covariate analysis are

TABLE 3

MEANS, STANDARD DEVIATIONS, DIRECTIONS OF EFFECT, AND

SIGNIFICANCE LEVELS FOR GROUP PERFORMANCE ON DEPENDENT MEASURES

NONVERBAL RESPONSE MODE

Variables	Group 1	Group 2	Group 3	Predicted Direction of Effect	Direction of Effect Observed	Level of Sign.
	(n = 7 for each group)					
Task A (max. score 16)						
M	12.28	10.28	10.71	1>2>3	1>3>2	N.S.
SD	1.50	2.36	2.71			
Task B (max. score 6)						
M	4.86	4.00	3.57	1>2>3	1>2>3	N.S.
SD	1.35	1.00	1.61			
Task C (max. score 4)						
M	3.43	2.86	2.57	1>2>3	1>2>3	N.S.
SD	.79	.90	.97			

Continued .....

TABLE 3 Continued

Variables	Group 1	Group 2	Group 3	Predicted Direction of Effect	Direction of Effect Observed	Level of Sign.
		(n = 7 for each group)				
VERBAL RESPONSE MODE						
Task D (max. score 12)						
M	7.43	3.00	5.00	1>3>2	1>3>2	.01
					1>2	.01
SD	2.88	2.08	2.30		1>3	N.S.
					3>2	N.S.
Task E (max. score 12)						
M	9.43	6.57	7.86	1>3>2	1>3>2	.04
					1>2	.05
SD	2.07	1.51	2.12		1>3	N.S.
					3>2	N.S.

presented in Table 4. The covariate analyses for Group with age and sex as covariates were essentially the same as that for the analyses without the covariates. Analyses of variance were also computed to test for the main effect of sex on the dependent measures for each group, and no significant sex differences were found using this analysis.

It was originally assumed that the five tasks were different measures of a trait we labelled social sensitivity, and therefore moderate correlations between the five dependent variables were expected. Pearson product-moment correlation coefficients were obtained between these variables combined across groups, and are presented in Table 5. There were no significant correlations, which suggests that the five tasks are independent, and each measures a unique ability. The expected correlation between tasks requiring nonverbal responses and the expected correlation between tasks requiring verbal responses were not obtained. Separate correlation matrices were then obtained for each group, revealing a significant negative correlation between Tasks C and E for the Group 2 children ($r = -.78$, $p < .03$), and a significant negative correlation between Tasks B and C for the Group 3 children ($r = -.76$, $p < .04$). The correlation matrices of the dependent variables separated by Group are presented in Table 6.

Item Analysis

The five tasks used as dependent measures in this study were constructed by the author. An analysis of the internal-consistency reliability of the five tasks was performed so that this information could be used to modify the scales in future research. The item analysis on each set of items revealed how these items were related

TABLE 4

SUMMARY TABLE OF MANOVA, ANOVA, AND ANCOVA

RESULTS FOR GROUP EFFECT ON DEPENDENT MEASURES

Variables	SS Between	df Between	SS Within	df Within	F-Ratio	p	Discriminant Vector
Task B	6.00	2	32.57	18	1.66	.22	.092
Covariate Sex	6.39	2	31.05	17	1.75	.20	
Covariate Age	4.02	2	31.35	17	1.09	.36	
Task C	2.67	2	14.29	18	1.68	.21	.120
Covariate Sex	2.59	2	13.94	17	1.58	.23	
Covariate Age	3.48	2	13.25	17	2.24	.14	
Task D	68.86	2	107.71	18	5.75	.01	.072
Covariate Sex	64.88	2	107.69	17	5.12	.02	
Covariate Age	67.11	2	107.60	17	5.30	.02	
Task E	28.67	2	66.29	18	3.89	.04	.056
Covariate Sex	23.50	2	63.44	17	3.15	.07	
Covariate Age	25.70	2	60.12	17	3.63	.05	
MANOVA		8		28	2.96*	.01	Root 1.69

*Note: The Hotelling-Lawley Trace was used for the MANOVA F test

TABLE 5

CORRELATION COEFFICIENTS FOR DEPENDENT VARIABLES

	Task A	Task B	Task C	Task D	Task E
Task A	1.00	.23	.31	.31	.42
Task B	.23	1.00	-.03	-.00	.25
Task C	.31	-.03	1.00	.17	.10
Task D	.31	-.00	.17	1.00	.36
Task E	.42	.25	.10	.36	1.00

TABLE 6

CORRELATION COEFFICIENTS FOR DEPENDENT VARIABLES BY GROUP

		Task A	Task B	Task C	Task D	Task E
GROUP 1	Task A	1.00	-.47	.16	.74	.33
	Task B	-.47	1.00	.38	-.28	-.09
	Task C	.16	.38	1.00	.13	.28
	Task D	.74	-.28	.13	1.00	.55
	Task E	.33	-.09	.28	.55	1.00
GROUP 2	Task A	1.00	.71	.02	-.13	.32
	Task B	.71	1.00	.00	-.48	.00
	Task C	.02	.00	1.00	.09	-.79
	Task D	-.13	-.48	.09	1.00	.00
	Task E	.32	.00	-.79	.00	1.00
GROUP 3	Task A	1.00	.05	.41	-.27	.21
	Task B	.05	1.00	-.77	-.09	.37
	Task C	.41	-.77	1.00	-.22	.13
	Task D	-.27	-.09	-.22	1.00	-.58
	Task E	.21	.37	.13	-.58	1.00

and whether each set of items can be scored like a scale. Individual item scores of the twenty Group 1 children were used. The appropriate statistical procedures for item analysis in scale construction are described in Nunnally (1967). The point-biserial correlation, which yields the relationship of each item with the total score for items on each scale, provided information regarding the contribution of individual items to each scale. The alpha coefficient was computed to describe the overall internal-consistency reliability of each scale. The basic requirements for scale construction, such as a large number of items ($\geq$60) and a large number of subjects ($\geq$300), were not met, and therefore the item analysis should be considered only an estimate of the reliability of these five preliminary scales.

The point-biserial correlations for each item and the alpha coefficients for each task are presented in Table 7. The internal-consistency reliability of the five scales ranged from high (r = .736 for Task D) to moderate (r = .522 for Task E; r = .506 for Task C) to low (r = .391 for Task B; r = .117 for Task A). The scale obtaining the lowest internal reliability - Task A - had been excluded from MANOVA analyses due to its pattern of correlation with the other dependent variables. The present item analysis suggests that individual children did not tend to perform in a similar manner across all task items. Properties unique to certain items may have influenced the response patterns on Task A. However, the internal consistency of the remaining four scales is adequate, and examination of the item analysis reveals it might be worthwhile to continue development of these scales using a larger number of items.

TABLE 7

POINT-BISERIAL CORRELATIONS AND ALPHA COEFFICIENTS IN ITEM ANALYSIS

Task A		Task B		Task C		Task D		Task E	
$\underline{r}$ = .117		$\underline{r}$ = .391		$\underline{r}$ = .506		$\underline{r}$ = .736		$\underline{r}$ = .522	
Item	r	Item	r	Item	r	Item	r	Item	r
1	.061	1	.553	1	.379	1	.614	1	.478
2	-.129	2	.372	2	.379	2	.635	2	.387
3	.144	3	-.306	3	.195	3	.573	3	.487
4	-.163	4	.101	4	.282	4	.427	4	.161
5	.113	5	.471			5	.492	5	.189
6	-.090	6	-.131			6	.189	6	.028
7	-.047								
8	.258								
9	-.052								
10	.013								
11	.164								
12	-.235								
13	.061								
14	.081								
15	.317								
16	.289								

According to Nunnally (1967) point-biserial correlations are expected to range from .00 to .40. For the purposes of the present analysis, a correlation above .10 was considered adequate, and correlations above .20 were considered good. Inspection of the point-biserial correlations for Task B revealed good correlations for three of the six items, and an adequate correlation with the total score for one item. The two items that did not contribute to the Scale were items 3 and 6. Good correlations were obtained for three of the four items on Task C, and an adequate correlation was shown for the fourth item. Five of the six items on Task D reached at least a .20 point-biserial correlation, and an adequate correlation was revealed for the sixth item. The point-biserial correlations for items of Task E indicate good correlations for three of the six items, adequate correlations for two items, and one item that did not contribute to the Scale.

Observational Findings

In addition to the quantitative differences found between groups the author also noted certain qualitative differences between the learning disabled groups in their test behaviour and test performance. Informal observations during the assessments suggested differences between the learning disabled groups in their style of interaction and their test approach. The Group 3 children frequently stared at the examiner, and did not visually attend to other objects in the room. The faces of these children had a 'blank' appearance, and they rarely expressed emotion appropriately by their facial expressions. The voices for these children (primarily the females of the group) also had a monotone or expressionless quality to them. The majority of the

Group 3 children were very talkative and would express resistance to difficult tasks verbally, by saying, for example, the following: "I'm not sure. I'll have to think about that one." (10-year-old female); "My head hurts when I have to think so much" (10-year-old male); "I don't know sign language." (9-year-old female). On the W.R.A.T. Spelling test these children wrote very slowly and tended to have large, unskillful handwriting. These children had great difficulty in forming puzzles on the W.I.S.C. Object Assembly sub-test, and would generally not find relationships between any of the puzzle parts, even when the puzzle was of a familiar object such as a face.

In contrast, the children in Group 2 rarely initiated conversation with the examiner, and provided very brief and often "concrete" verbal replies to questions. All Group 2 children tended to resist tasks by stating "I don't know." These children seemed to have a more alert appearance than did the Group 3 children. They exhibited quick, agile hand movements on the W.I.S.C. Performance sub-tests, and took care to align the task materials correctly.

The majority of Group 1 children responded quickly and appropriately to requests by the examiner, and they appeared to feel at ease in the testing situation.

CHAPTER IV

DISCUSSION

The principal purpose of this study was to investigate whether two groups of learning-disabled children, classified according to their pattern of neuropsychological abilities, would differ in their performance on five tasks of social sensitivity. Clinical observations by previous researchers suggested that children with visual-perceptual and visual-spatial difficulties (the nonverbal learning disabilities) are deficient in the area of social perception, in comparison to children with auditory-perceptual (verbal) difficulties (Johnson & Myklebust, 1967; Myklebust, 1975). The aim of the present study was to test for these hypothetical differences in social sensitivity using a controlled experimental design.

The nature of the study was primarily exploratory, as tasks were designed by the author in an attempt to find valid and reliable measures of social sensitivity. The hypotheses as outlined in the Introduction chapter were partly supported by the data. Statistically significant differences between groups were found for the combination of dependent variables, as well as for the tasks requiring verbal responses. Furthermore, the pattern of group performance was in the predicted direction on four of the five tasks.

Discussion of the results will first consider the test performance of the subjects on the three tasks requiring nonverbal responses (Tasks A, B, and C). Limitations of these exploratory tasks will be outlined.

The discussion will then examine subjects' performance on the two verbal measures of social sensitivity (Tasks D and E). Next will be considered the composition of the two sub-types of learning-disabled children selected for this study. In the final section of the Discussion, conclusions and implications of the results will be drawn, and recommendations for future research will be suggested.

Test Performance on Nonverbal Response Measures

Three previous studies had focussed on the learning-disabled child's ability to interpret accurately the affective states of others (Wiig & Harris, 1974; Bachara, 1976; Bryan, 1977). The child's understanding was determined using verbal measures (e.g., circling the name of the emotion that best matched a young female's videotaped nonverbal expressions of emotions) in two of the three studies, while the stimulus information was presented visually (Wiig & Harris, 1974; Bryan, 1977). The third study (Bachara, 1976) used a nonverbal measure (selection of appropriate facial expression from a set of pictures) and presented task information both visually (with pictures) and verbally (with stories to accompany the pictures). In all three studies, the performance of the learning-disabled children was significantly lower than the performance of the control group.

In this study, an attempt was made to control for the verbal and nonverbal components of the response required on tasks of social sensitivity. Information regarding the modality of stimulus presentation and response selection in the present and previous tasks is summarized in Table 8. The three tasks to be considered in the present section (Tasks A, B, and C) required a nonverbal (visual-motor) response by the

TABLE 8

STIMULUS PRESENTATION AND RESPONSE MODALITIES USED IN STUDIES INVESTIGATING SOCIAL SENSITIVITY OF LEARNING-DISABLED CHILDREN

STIMULUS PRESENTATION	RESPONSE MODALITY: Verbal	RESPONSE MODALITY: Visual-motor
Verbal		Ozols Task A Ozols Task B
Visual	Bryan, 1977 Wiig & Harris, 1974 Ozols Task D Ozols Task E	
Verbal/ Visual		Bachara, 1976 Ozols Task C

subjects. The stimulus information in Tasks A and B was presented verbally in the form of stories and the stimulus information in Task C involved a combined verbal-visual presentation - stories were presented and accompanied by appropriate pictures.

It was expected (Hypothesis 1) that children with visual-spatial difficulties (Group 3) would show a marked impairment of ability to recognize facial expression, in comparison to the performance of normal children (Group 1) and children with verbal disabilities (Group 2). The hypothesis was not confirmed on Task A, as differences between groups failed to reach acceptable statistical levels of significance. The item analysis of Task A (see Table 5, p.44) reveals the low internal reliability of this scale (r = .117). Ten of the 16 items on this task failed to reach adequate point-biserial correlations with the total Task A score. Thus, the unreliable item construction of the scale likely influenced the pattern of group results.

Although quantitative group differences were not present, inspection of test protocols revealed certain qualitative differences between subjects. While Group 1 children occasionally appeared to be using a strategy in their selection of facial expressions (e.g., asking if they could point to a picture more than once), none of the learning-disabled subjects expressed similar concerns. When asked to provide labels for these facial expressions, the errors of the learning-disabled subjects revealed that they interpreted many expressions as simply either negative or positive, and did not attend to the subtle differences between emotions within each (positive or negative) dimension. Finally, it is probable that children erred on this task for a variety of

qualitatively distinct reasons, as there are many hypothetical steps involved in arriving at a correct response to Task A. It is clear that an adequate understanding of the verbal stimulus information is crucial to adequate task performance.

Task C was also designed to test Hypothesis 1. Although the pattern of group performance was in the predicted direction (Group 1 > Group 2 > Group 3), the differences between groups again failed to reach acceptable levels of statistical significance. However, when the characteristic roots of the five dependent variables were examined in a MANOVA matrix, it was clear that Task C was the best single predictor of group membership. Task C was thus important in contributing to the significance of the MANOVA model when all dependent variables were considered together.

Examination of mean scores (see Table 3, p.40) suggests that this task may have been too easy, as children appeared to reach the ceiling of the test. The present scale was a modification of the Borke Scales of Empathy (Borke, 1971) which were designed to test the interpersonal perception of young children. Studies have revealed that children as young as 3 years of age can identify situations that evoke different affective responses (Borke, 1971; Borke, 1973). Task C was, therefore, modified considerably following pilot testing in an attempt to ensure adequate test ceilings. It is likely that the modifications did not meet this goal for the control group because the pilot testing was conducted on learning-disabled children.

The task format and age of subjects were similar to those used in Bachara's (1976) study, in which significant group differences were reported. Bachara did not take similar precautions regarding developmental

effects, and yet reported the tasks were sensitive to differences between groups for children up to 12 years of age. The discrepant findings between Task C of the present study and Bachara's study may result from differences in task materials. However, it would be important to clarify this issue in future studies.

It was predicted in Hypothesis 2 that Group 3 children would show a marked deficiency in ability to interpret nonverbal gestures, in comparison to the performance of Group 1 and Group 2 children. This expectation was tested by examining performance on Task B, in which children were asked to select a hand gesture that the story character might be using. The pattern of group performance on Task B was in the expected direction (Group 1 > Group 2 > Group 3) but the differences did not reach acceptable levels of statistical significance. Inspection of group means for this variable (see Table 3, p.40) again suggests the possibility of a ceiling effect. Although generally assumed to be a skill that improves with age, there were no norms available indicating developmental changes in the understanding of nonverbal gestures.

Children who performed poorly on this task may have experienced difficulty at one or more of the steps in the inferential process. A hypothetical sequence of cognitive processes involved in Task B is as follows: 1) child attends to and understands the verbal information presented in the story, 2) child infers the next action in the story, 3) child determines the appropriate visual expression of this action, 4) child scans the visual array appropriately, 5) child matches his internal representation of the action with the corresponding picture of the action, 6) child executes correct visual-motor response designating appropriate picture. It is likely that individual children

followed different sequences in the inferential process, and that additional cognitive processes may occur. Thus, to determine the reason for a child's failure on this task, we would need to analyze closely the different components of the task.

In summary, three tasks were designed and utilized to investigate children's ability to select an appropriate facial expression or nonverbal gesture. The tasks required nonverbal (visual-motor) responses, but the information was presented verbally or in a combined verbal-visual presentation. Although the trend of group performance on these measures was in the expected direction on two of the three tasks, there were no statistically significant differences between groups. Explanations specific to each variable were suggested (i.e., Task A had low internal consistency; ceiling effects were present for Tasks B and C).

It was initially assumed that visual skills were more important to the successful completion of these tasks than were auditory skills, and the hypotheses relating the performance of the three groups were based on this assumption. It is clear, however, that a child who failed to comprehend the verbal information presented in the stories had a low probability of selecting the appropriate picture. The difficulty of the verbal material for the Group 2 children was evidenced in the frequent repetition of instructions required for this group. It is, therefore, possible that each group of learning-disabled children made qualitatively distinguishable errors on these tasks: the Group 3 children may have failed to detect differences in the visual array, whereas the Group 2 children may have failed to comprehend the verbal story information as well as the task requirements. In the present study, tasks were not designed to be either completely verbal or completely

nonverbal in stimulus presentation, because the combined presentation was considered more realistic and common to actual social interactions that the children may experience. However, since group differences were not significant, a relevant next phase in the investigation might be to separate the visual from the verbal stimulus information. A further confounding factor on the present tasks was that the training program of several Group 3 children in a special school emphasized task materials similar to those employed in the present study.

There were no significant positive correlations obtained between the three nonverbal response measures (r = .23 for Task A with B; r = .31 for Task A with C; r = -.03 for Task B with Task C). This would suggest that each task is, indeed, investigating a separate and unique dimension of social sensitivity.

Test Performance on Verbal Response Measures

It was hypothesized that both sub-groups of learning-disabled children (Groups 2 and 3) would be deficient in their verbal descriptions and explanations of social situations presented visually, in comparison to the performance of the control group (Hypothesis 3). It was expected that children with verbal difficulties would experience greater difficulty on this task than would children with visual-spatial difficulties. Hypothesis 3 was partly confirmed, in that the differences between Group 1 and Group 2 children on Tasks D and E were statistically significant.

Both measures required the subject to use verbal expressive skills, but no verbal information accompanied the stimulus presentation. The verbal measures were based on coding categories developed by Flapan (1968) in her investigation of psychological causality and interpersonal

inferences with young children. She reported that explanations of feelings developed chronologically from descriptions of overt actions to explanations in terms of interpersonal perceptions. When children were asked to make up stories about pictures Flapan found the method did not adequately reflect the child's ability to perceive psychological material, and the child's own personality characteristics were reflected in the story as much as his ability to understand social interaction. For these reasons Tasks D and E were presented as specific questions.

Task D investigated children's ability to attach the appropriate verbal label to facial expressions shown in pictures of social situations. Significant group differences were found on this variable ($F = 5.75$, $p < .01$), and subsequent analyses revealed the significant difference was between Groups 1 and 2. The fact that reading-disabled children have difficulty in attaching verbal labels to nonverbal expressions had been revealed in previous studies (Wiig & Harris, 1974; Bryan, 1977). Furthermore, previous research studying adults with brain lesions reported that patients with lesions in the left hemisphere made errors in naming emotions, while patients with lesions in the right hemisphere made errors in recognition (Warrington & James, 1967).

It had been assumed that children with visual-perceptual problems would encounter difficulty in the recognition phase of the task, which would lead to further difficulty in labelling. It may be the case, however, that this group of children can pick up enough visual cues from the scene to form judgments about appropriate labels for the expressions. Group 3 children may have benefitted from a tendency toward guessing, whereas the tendency in difficult tasks for Group 2 children was to respond "I don't know".

A hypothetical sequence of cognitive processes involved in answering Task D ("What is he/she feeling?") is as follows: 1) child attends to and understands the verbal question, 2) child interprets 'feeling' as an emotion rather than as meaning physical contact, 3) child attends to facial expression of character and hypothesizes a label for the emotion, 4) child uses cues from the complete visual scene to substantiate or refute his hypothesized label, 5) child verbally states this label correctly.

Inspection of test protocols revealed additional qualitative differences. Children tended to label correctly the adult character's feeling before the correct labelling of the child character's feeling. Furthermore, while the Group 1 children presented a rich variety of affective labels, the learning disabled groups tended to identify emotions more on a positive/negative dichotomy basis.

Task E investigated the quality of children's explanations of feelings. Significant group differences were found on this variable ($F = 3.89$, $p < .04$), and subsequent analyses revealed that Group 2 differed significantly from Group 1. This task was perhaps the most "exploratory" of the measures employed, as previous studies investigating social sensitivity in learning-disabled children had not gone beyond rather simplistic measures of labelling and recognition. Task E measured children's depth of understanding regarding feelings, and therefore responses could not simply be considered 'right' or 'wrong'. A variety of explanations were provided by the subjects, and attempts were made to categorize these at one of three levels.

In their discussion of children with nonverbal learning

disabilities Myklebust & Johnson (1967) report that these children do not perceive interrelationships in nonverbal situations, and therefore provided inappropriate stories in response to action pictures. For example, one of the pictures they presented was of a boy, looking very apprehensive, hiding in a woodshed and putting a book in the seat of his trousers to protect himself from an angry man coming out of the house with a belt in his hand. In the background was a house with a broken window and a baseball bat on the ground. A 9-year-old child with visual nonverbal problems gave the following interpretation of the picture: "A poor kid hid in a tool shed and tried to read a book. Then he heard footsteps. A man was coming so he ran away with the book." (Johnson & Myklebust, 1967, p . 280).

A comparable action picture used in the present task was a picture of a boy at the back of the class casting a worried look at his teacher as he passed a note to the boy beside him. The Group 3 children frequently failed to grasp the meaning of this picture (i.e., fear of being caught cheating). Two typical responses by this group to questions regarding the boy passing the note were:

1. (8-year-old female): (doing?) He's handing something over to another little boy. (feeling?) Sad. (why?) He's giving something away.
2. (10-year-old male): (doing?) He's handing him a piece of paper. (feeling?) Happy. (why?) Cause he's doing something for him.

In general, the Group 2 children expressed a clearer understanding of the basic meaning of the picture:

3. (10-year-old male): (doing?) He's giving him the note. (feeling?) He might get in trouble too. (why?) Cause he's giving

him the note.

4. (9-year-old male): (doing?) He's giving the boy a piece of paper. (feeling?) Not happy. (why?) Cause he rips some of the things off his paper.

The scoring categories were derived from Flapan's method, and thus provided an estimate of the child's social perception that was based on his verbal responses to questions. The Group 2 children often received low scores on this task because they did not provide adequate labels or failed to include a full explanation for the feeling. The Group 3 children, however, appeared able to pick up enough visual cues and generate enough verbal information to receive credit for their responses. Thus, an important limitation of the present coding system is its reliance on verbal skills, and its insensitivity to the subtle meanings of the action. Future studies could attempt to categorize the levels of interpretation of nonverbal stimuli.

Composition of learning disabled groups

An important concern in the design of the study was the formation of reliable sub-groups of learning-disabled children on the basis of their previous neuropsychological test results. Attempts were made to keep the two groups as similar as possible on the control variables (age, WISC Full Scale IQ, sex, family background, handedness and history of emotional disturbance), while distinguishing the groups by low performance in either visual-perceptual or auditory-perceptual abilities. It is useful to compare the levels of performance of the two groups in the present study with similar groups reported in previous studies by Rourke and his colleagues (Rourke & Finlayson, 1978;

Rourke, Young & Flewelling, 1971; Rourke & Telegdy, 1971). These previous studies all used children ranging in age from 9 to 14 years, whereas the children in the present study were somewhat younger, ranging in age from 8 to 11 years. Although the patterns of group performance generally remained the same as those reported by Rourke (Rourke & Finlayson, 1978; Rourke, Young & Flewelling, 1971), the children in the present study achieved lower levels of performance on the WISC and WRAT measures. The younger chronological age of the present subjects did not contribute to their lower levels of performance, as all scores were percentiles or standardized scores. The larger number of selection criteria in the present study may have served to lower these scores, as children were necessarily performing poorly on a variety of measures. In previous studies, subjects had been selected either on the basis of their pattern of WRAT performance, or on the basis of their pattern of WISC Verbal IQ and WISC Performance IQ performance.

The average WRAT Spelling percentile score for Group 3 children was much lower in the present study than in previous studies, and this score was significantly below the mean age score. It is possible that younger children rely more on visual-perceptual skills in their spelling of words. Their visual-perceptual difficulties would then hinder their spelling performance, and lower scores would therefore be obtained than in studies using older children.

The initial selection criteria for the present study were formulated using both WRAT and WISC measures. Group 2 was to consist of children with High PIQ/Low VIQ (WISC) scores, and Low Reading, Low Spelling/High Arithmetic (WRAT) scores. The composition of Group 3 was to be High VIQ/Low PIQ (WISC), and High Reading, High Spelling/Low

Arithmetic (WRAT). However, the neuropsychological reports indicated that the majority of children selected with this Group 3 pattern were considered to have emotional problems and a neuropsychological profile that was "contraindicative" of dysfunction at the level of the cerebral hemispheres. The selection criteria were subsequently modified, placing less emphasis on the WRAT pattern, while adding criteria that indicated visual-spatial and tactile-perceptual difficulties. It is, however, interesting and important to note that children with inferred emotional difficulties exhibited WRAT and WISC patterns similar to the group of children with visual-perceptual problems (Group 3). It appears clearly worthwhile to study the social sensitivity of this unique group of emotionally disturbed children.

The present study raises questions concerning the sex distribution of children in the two sub-groups. In the initial stages of subject selection it was apparent that there were more females than males that fit Group 3 criteria, and far more males than females that fit Group 2 criteria. In previous studies using similar sub-groups (Rourke, Young & Flewelling, 1971; Rourke & Finlayson, 1978) the male-female ratio is higher for Group 2 subjects than for Group 3 subjects.

Another limitation in the present subject selection procedure was the administration of only five WISC sub-tests in order to obtain prorated Verbal IQ, Performance IQ and Full Scale IQ scores. These prorated scores served to confirm the original pattern obtained in the neuropsychological testing for Group 2 and 3 subjects. However, these were the only scores available for Group 1 subjects, and subjects were selected and matched on the basis of their prorated scores.

Although time restraints rendered it difficult to obtain any additional information concerning the ability structure of Group 1 subjects, future studies could consider a larger number of variables when forming groups matched on basic dimensions.

Another notable consideration in the formation of learning disabled sub-groups is the restricted number of available studies specifying criteria for group selection. As this is a relatively new empirical approach to the area of learning disabilities little is known about optimum means of subject selection, and no standards are available stating appropriate cut-off scores. A similar problem was evident in the attempt to exclude from the study all children with a suspected emotional problem. Children whose parents had attended child management courses such as the Directive Parental Counselling Program prepared by Holland (1975) were allowed to remain in the study, while any child who had been institutionalized for an emotional problem or received a psychiatric diagnosis unrelated to learning disabilities was excluded. This screening method, therefore, did not rule out children who had mild behaviour problems in the classroom or home, and it is probable that a large number of Group 2 children fit in this category.

The final and most important limitation regarding subjects used in the present study was the small number of subjects in each group. Children with reading disabilities were referred far more often for neuropsychological assessment than were children with nonverbal disabilities, and therefore it was difficult to obtain adequate numbers of Group 3 subjects. The difficulty in obtaining female reading-disabled subjects was previously mentioned. This lack of variety in assessment referrals may be influenced by teachers' perceptions of learning

disabilities as being a "male" disability related to "reading".

Conclusions and Implications

The social rejection of learning disabled children by their parents and peers has been described elsewhere by Bryan (1979) and is summarized in the succinct statement: "Learning disabled children do not suffer only from academic failure; many carry an additional burden of social failure." (Bryan & Bryan, 1978, p. 124). The general goal of the present study was to explore possible reasons for their social failure. Previous studies had reported that learning-disabled children had difficulty in perceiving accurately the affective states of others. The present study examined various components and measures of this ability to understand the affective world. The hypotheses exploring differences between the sub-groups of learning-disabled children were partly supported by the data. The results revealed a difference between the control group and children with auditory-perceptual difficulties on tasks requiring the labelling and explanation of affective states, a finding which corresponds with previous studies using verbal measures (Wiig & Harris, 1974; Bryan, 1977). However, no statistically significant differences were found in comparisons involving children with visual-perceptual difficulties.

In the previous sections several explanations were suggested to account for the pattern of results. Limitations of the dependent measures were discussed, emphasizing the possibility of ceiling effects on Tasks A, B, and C. Limitations due to subject selection procedures were also considered, noting the small number of subjects in each group. Thirdly, theoretical considerations may account for the lack

of significant group differences, such as the possibility that Group 3 children exhibit inappropriate social behaviour because of an expressive disorder, rather than receptive difficulties.

The area of social cognition is a relatively new area of investigation in developmental psychology and it is not yet clear how average-achieving youngsters develop adequate social perception and achieve social adjustment. Child-clinical research on the learning disabled can proceed effectively only in conjunction with studies concerning the developmental acquisition of relevant skills. Future research could examine the development of social competence, as well as a study of those characteristics associated with peer popularity. Understanding of the deficiencies of learning-disabled children could then proceed from knowledge of required skills in adequate development. Rutter (1979) has been pursuing this approach in the study of social competence in the primary prevention of psychopathology.

The problem-solving approach is another current trend in the study of social cognition. The relationship of social adjustment to a child's ability to think of alternative solutions to interpersonal problems has recently been explored (Shure & Spivack, 1979; Spivack & Shure, 1974). The focus on interpersonal cognitive problem-solving (ICPS) skills emphasizes the importance of flexibility to adjustment. Future studies on children's cognitions could examine their attitudes on "how to make friends", as well as their notions of how to respond in hypothetical social situations.

While this approach emphasizes verbal skills, the necessity of determining adequate nonverbal measures of social perception appears clear. An interesting possibility would be to pursue development of

Task C with all explanations of task requirements performed nonverbally, thus creating a visual matching task. Another possibility would be to compare the performance of learning disabled and control children on a task that presented visual situational information that was discrepant from the auditory information. A child's response to a question concerning the feeling of a character would reflect whether he attended primarily to the visual or the verbal information.

Furthermore, it would be useful to categorize and validate observations on the behaviour of learning-disabled children in actual social interactions. A preliminary study towards this goal would be to correlate the child's performance on tasks of social sensitivity with a social behaviour rating scale completed by the teacher.

Finally, remediation for learning-disabled youngsters should clearly take their social problems into consideration. Promising new methods to aid in the development of social perception are role playing and the interpersonal problem-solving tasks presented by Shure & Spivack (1979). It remains evident that different sub-types of learning-disabled children will benefit from different methods of instruction in social or academic skills.

APPENDIX A

ACADEMIC RATING FORM FOR GROUP 1 CHILDREN

Dear Mrs. Hughes:
For the purposes of my study I need to know if the children I tested have been performing academically at an average, below-average, or above-average level (in comparison to their classmates). Could you please indicate this information for me on this form, and return the form to Mrs. Hansen. Thank you very much for your co-operation during my research.

E. Ozols Edie Ozols

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				BELOW AVERAGE	AVERAGE	ABOVE AVERAGE
1.	S	H	READING			
			SPELLING			
			ARITH.			
2.	P	A	READING			
			SPELLING			
			ARITH.			
3.	J	B	READING			
			SPELLING			
			ARITH.			
4.	C	T	READING			
			SPELLING			
			ARITH.			

Teacher's Signature: _____

APPENDIX B

CONSENT FORM FOR GROUP 1 CHILDREN

Dear Parent:

This is to request your permission to allow your child to participate in a study of nonverbal communication. The performance of learning disabled children will be compared to the performance of your child and other children in the group of average achievers. The results of this study may help us understand why certain learning disabled children experience difficulty in social relationships. The Essex County Board of Education has kindly consented to allow us to use their facilities.

The study is being conducted by Edie Ozols, a Masters level student at the University of Windsor.

The children participating in this study will be given an intelligence test and an academic achievement test, for screening purposes only. The children will then be given four separate tasks investigating their interpretation of nonverbal communication. These tests involve activities which children often find quite enjoyable.

Please be assured that the tests to be administered do not in any way represent a personal evaluation of your child. The results will be used impersonally and solely for the purpose of this study.

Thank you for your consideration.

E. Ozols

Edie Ozols, B.Sc.
Graduate Student

Byron P. Rourke, Ph.D.
Professor of Psychology
(Supervisor)

.....

I _____ grant permission for my son/daughter

_____ to participate in the study being

conducted by Edie Ozols.

Date: _____

APPENDIX C

CONTACT LETTER FOR GROUP 2 AND 3 CHILDREN

DEPARTMENT OF NEUROPSYCHOLOGY

Mr. & Mrs.

July 23, 1979.

Dear Mr. & Mrs.

We are presently conducting a follow-up study to learn more about children like your son . We are interested in understanding how children with learning problems communicate, and testing will take approximately 1 1/2 hours. If you are willing to have your child participate in this research project we would appreciate your contacting us as soon as possible at 253-4261, ext. 329 or ext. 349.

Thank you for your co-operation.

Sincerely,

E. Ozols

(Miss) E. Ozols, B.Sc.,
Graduate Student

APPENDIX D

SCORING CRITERIA AND SCORING PROCEDURE FOR TASKS D AND E

SCORING PROCEDURE - TASKS D AND E

General Scoring Considerations

There are two social scenes presented, with three main characters in each. Two questions ("What is he/she feeling?" - Task D; "Why?" - Task E) about each of these six characters are scored. The first question ("What is he/she doing?") is considered a lead-up question and is not scored. However, the information presented in response to this question may be used as part of the response to Task D (see Point 3).

1. If a subject provides different level responses to a question he receives credit for the highest level response.

ex. (Feeling?) "He's feeling excited and worried."

Score 2 points for "worried". ("excited" alone would receive a score of 1 point)

2. Responses emitted after the examiner probes the limits of understanding do not receive credit.

ex. (Feeling?) "Bad." (Feeling anything else?) "Sad, I guess."

Score 0 points for "bad".

3. If a subject provides an appropriate response to Tasks D or E in any of the three questions (Doing?, Feeling?, Why?) he receives credit for his response.

ex. (Doing?) "Feeling scared." (Feeling?) "His mouth."

Score 2 points for "scared" in Task D.

ex. (Feeling?) "She might be hurt." (Why?) "I don't know."

Score 0 points in Task D, score 2 points in Task E.

4. A subject receives credit if he spontaneously provides an answer to Task E in his response to Task D.

ex. (Feeling?) "He's feeling scared because the teacher might catch him."

Score 2 points in Task D; score 2 points in Task E.

5. When a subject responded to Task D by a statement beginning with "that", he does not receive credit, as it represents his misinterpretation of the question (i.e. "feeling" interpreted as "thinking"). However, it is important to note that the quality of these "that..." statements varied across subjects.

ex. (Feeling?) "That his mother may be hurt."

Specific Scoring Criteria - Task D

Questions 1, 2 and 3:

a) Score 2 points if subject specifies a dominant feeling of negative alarm.

ex. "scared", "frightened", "shocked", "anxious", "worried", "astonished", "amazed"

b) Score 1 point if subject specifies the following feelings:

(i) appropriate but nondominant negative, ex. "sad", "puzzled"

(ii) appropriate but nonnegative feeling of alarm,

ex. "excited", "surprised"

(iii) appropriate positive feeling with explanation,

ex. "feeling relieved that his sister came out OK"

c) Score 0 points if subject:

(i) does not specify an emotion, and interprets "feeling" as "thinking"

ex. (Feeling?) "That the house will burn down."

(ii) provides a concrete interpretation

ex. (Feeling?) "His shirt".

(iii) responds "I don't know", "I'm not sure"

(iv) gives an interpretation of the feeling

ex. "What happened?", "Is she OK?"

(v) specifies a negative inappropriate feeling, ex. "angry"

(vi) specifies a general vague negative feeling, ex. "bad"

Questions 4 and 5:

a) Score 2 points if subject specifies a dominant negative feeling of fear or concern.

ex. "angry", "mad ", "scared", "afraid", "worried"

b) Score 1 point if subject specifies the following feelings:

(i) appropriate but nondominant negative, ex. "guilty", "sneaky", "nervous"

(ii) appropriate positive feeling with explanation,

ex. "feeling glad because he got the answers to the test"

c) Score 0 points if subject:

(i) does not specify an emotion, and interprets "feeling" as "thinking"

ex. (Feeling?) "That he shouldn't do that".

(ii) provides a concrete interpretation

ex. (Feeling?) "The note".

(iii) responds "I don't know", "I'm not sure"

(iv) specifies a negative inappropriate feeling, ex. "sad"

(v) specifies a general vague negative feeling, ex. "upset"

Question 6:

a) Score 2 points if subject specifies a dominant negative feeling of anger.

ex. "a little bit angry"

b) Score 1 point if subject specifies an appropriate but non-dominant negative feeling, ex. "disappointed", "sad", "suspicious"

c) Score 0 points as for Questions 1, 2, 3, 4, and 5.

Specific Scoring Criteria - Task E

Questions 1, 2 and 3:

a) Score 2 points if subject's explanation involves interpersonal concern related to one or more characters in the fire scene.

ex. "the little boy might get killed", "because baby and mother in the fire"

b) Score 1 point if subject explains the feeling according to the situation.

ex. "because there's a fire in the house"

c) Score 0 points if subject:

(i) states vague unspecified concern, ex. "because he wants his friend", "because he don't know what happened"

(ii) "I don't know"

(iii) states a description of the character, ex. "because she's crying", "because he has a worried face on"

Questions 4 and 5:

a) Score 2 points if subject's explanation involves interpersonal concern related to the teacher and cheating (passing notes) in the classroom scene.

ex. "because he's watching the teacher", "because the teacher's seen him", "because he may get caught"

b) Score 1 point if:

(i) subject's explanation is in terms of the general situation

ex. "its not right", "its not good to hand around notes", "gonna get in trouble", "he don't think he should do this"

(ii) subject's explanation involves the reaction of the other boy in the cheating situation

ex. "because the boy don't want to take the note"

(iii) subject's explanation involves the character's personal reaction to the cheating

ex. "because he got the answers to the test", "because he can't do his work", "because he doesn't know himself"

c) Score 0 points if subject:

(i) replies "I don't know"

(ii) provides a physical description of the character, ex. "because he has a thinking face on", "because the way his eyes look"

(iii) provides an explanation of the situation not involving cheating

ex. (sad) "because he has to do his work", (happy) "because it concerns someone else"

Question 6:

a) Score 2 points if subject's explanation involves interpersonal concern related to the two boys and cheating (passing notes)

ex. "because the two boys are passing notes around"

b) Score 1 point if subject explains the feeling according to the situation.

ex. "because he's looking at her in a funny look"

c) Score 0 points if subject:

(i) replies "I don't know"

(ii) provides an explanation of the situation not involving cheating, ex. "because nothing exciting's going around"

APPENDIX E

TEST MATERIALS - W.R.A.T. FORM, W.I.S.C. FORM, TEST PROTOCOL

WIDE RANGE ACHIEVEMENT TEST

Reading, Spelling, Arithmetic from Pre-School to College

By J. F. Jastak, S. W. Bijou, S. R. Jastak

Printed in U.S.A.
1937, 1946, 1963
Revised Edition
1965

Name ..... Birthdate ..... M. F. Chron. Age .....

School ..... Grade ..... Reading Score ..... Grade ..... Stand-Sc. ..... %ile .....

Referred by ..... Spelling Score ..... Grade ..... Stand-Sc. ..... %ile .....

Date ..... Examiner ..... Arithmetic Score ..... Grade ..... Stand-Sc. ..... %ile .....

Percentiles and Standard Scores corresponding to grade ratings and age may be found in the Manual.

Level I—Spelling—Grade Norms.

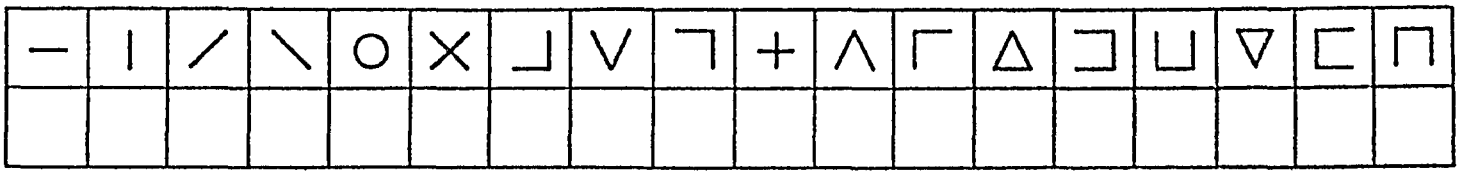
Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade
1	N.5	12	Kg.4	23	1.5	34	3.0	45	5.7	56	10.3
2	N.8	13	Kg.5	24	1.6	35	3.2	46	6.0	57	10.9
3	Pk.1	14	Kg.6	25	1.7	36	3.5	47	6.3	58	11.5
4	Pk.2	15	Kg.7	26	1.8	37	3.7	48	6.5	59	12.2
5	Pk.3	16	Kg.8	27	2.0	38	3.9	49	6.8	60	13.0
6	Pk.5	17	Kg.9	28	2.2	39	4.2	50	7.2	61	13.8
7	Pk.7	18	Gr.1.0	29	2.3	40	4.5	51	7.7	62	14.5
8	Pk.9	19	1.1	30	2.5	41	4.7	52	8.2	63	15.2
9	Kg.1	20	1.2	31	2.6	42	5.0	53	8.7	64	15.9
10	Kg.2	21	1.3	32	2.7	43	5.3	54	9.2	65	16.7
11	Kg.3	22	1.4	33	2.9	44	5.5	55	9.7		

Level II—Spelling—Grade Norms.

Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade
0	Kg.2	11	4.0	21	6.7	31	9.0	41	12.4
1	Kg.6	12	4.3	22	6.8	32	9.3	42	12.8
2	Gr.1.0	13	4.6	23	7.0	33	9.6	43	13.2
3	1.3	14	4.9	24	7.2	34	9.9	44	13.6
4	1.6	15	5.2	25	7.4	35	10.2	45	14.0
5	1.9	16	5.5	26	7.6	36	10.5	46	14.4
6	2.2	17	5.8	27	7.8	37	10.8	47	15.0
7	2.6	18	6.1	28	8.1	38	11.2	48	15.7
8	3.0	19	6.3	29	8.4	39	11.6	49	16.4
9	3.3	20	6.5	30	8.7	40	12.0	50	17.2
10	3.7							51	18.0

Spelling Scores

Level I		Level II	
Test	Cumul Score	Test	Cumul Score
Copying		Copying	
1 point per mark	1 to 18	4-9	1
		10-17	2
		18	3
Name		Name	
1 letter	19	1 letter	4
2 letters	20	2 letters	5
Spelling		Spelling	
1 point per word	21 to 65	1 point per word	6 to 51



Name _____ 31. _____

1. _____ 16. _____ 32. _____

2. _____ 17. _____ 33. _____

3. _____ 18. _____ 34. _____

4. _____ 19. _____ 35. _____

5. _____ 20. _____ 36. _____

6. _____ 21. _____ 37. _____

7. _____ 22. _____ 38. _____

8. _____ 23. _____ 39. _____

9. _____ 24. _____ 40. _____

10. _____ 25. _____ 41. _____

11. _____ 26. _____ 42. _____

12. _____ 27. _____ 43. _____

13. _____ 28. _____ 44. _____

14. _____ 29. _____ 45. _____

15. _____ 30. _____ 46. _____

LEVEL I, Oral Part

3 Fingers, 8 fingers. 9 or 6? 42 or 28?

3 pennies, spend 1 ?_____ ; 3 + 4 apples?_____; 9 marbles, lose 3?_____

Written part.

1 + 1 = _____

4 − 1 = _____

6 + 2

5 − 3

3 2
2 4 + 4 0

4 × 2 = _____

2 3 × 3

2 9 − 1 8

7 5 + 8

4 5 2
1 3 7
+ 2 4 5

6 ÷ 2 = _____

$62.04 − 5.30

1½ hr. = ____min.

6) 9 6 8

⅓ + ⅓ = _____

15/5 = _____

7/9 − 5/9 = _____

8 2 3 × 9 6

4 5/6
3 1/3
+ 2 ½

⅖ of 35 = _____

½ yd. = _____in.

1¾ = 4/_____

27) 3 8 4

¾ yr. = _____mo.

Multiply: 7.96 × 30.8

⅔ = 12/_____

5 − 1⅓

2⅓ doz. = _____

Which is more?

7/8 or 13/15 Ans. _____

Find the average of

24, 18, 21, 26, 17

Ans. _____

Write as a percent

¾ = _____%

4⅕ × 3⅓ = _____

3/10 ÷ 3/4 = _____

8/9 × 2/4 × ½ = _____

Write as decimal:

⅔ = _____

20% of 120 = _____

8.2) 6 2.7 0 3

6^2 = _____

Change to familiar numerals:

M C X L II = _____

(− 5) (+ 9) = _____

Find interest on

$300 at 4½% for 7 mo.

Ans. _____

Solve:

y + (9 − 8y) = 6 5

y = _____

Find square root: √3 3 4.8 9

Arithmetic—Level I—Grade Norms. Percentiles and Standard Scores corresponding to grade rating and age may be found in Manual.

Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade
[illegible]																	
[illegible]																	
[illegible]																	
[illegible]																	
[illegible]																	
[illegible]																	
[illegible]																	

LEVEL II, Oral Part 1. Counts 1-5 2. Counts 6-15 3. Reads 3 4. Reads 5 5. Reads 6
6. Reads 17 7. Reads 41 8. Pennies 3-1 9. Apples 3 + 4 10. Marbles 9-3 10

Written part.

$43 + 6$ $94 - 64$ $\$4.95 \times 3$ $726 - 349$

$2\frac{1}{2} + 1\frac{1}{2} =$ _____

$\frac{1}{6}$ of 30 = _____

$$\begin{array}{r} 229 \\ 5048 \\ 63 \\ +\ 1381 \end{array}$$

17

$9\overline{)4527}$

$1\frac{1}{3}$ ft. = _____ in.

$2 -$ _____ $= \frac{1}{4}$

Add: $6\frac{1}{4}$, $1\frac{5}{8}$, $4\frac{1}{2}$

809×47

Write as percent: .42 = _____%

23

Subtract: $10\frac{1}{4} - 7\frac{2}{3}$

Multiply: 6.23×12.7

Find average: 34, 16, 45, 39, 27

Ans. _____

Write as decimal: $52\frac{1}{2}\% =$ _____

Write as percent: $\frac{3}{8} =$ _____%

$2.9\overline{)308.85}$

29

Add: 3 ft. 6 in.
5 ft. 5 in.
8 ft. 11 in.

$M + 2 = 5$

$M =$ _____

$2x = 3$

$x =$ _____

$6 \times 3\frac{7}{8} =$ _____

15% of 175 = _____

Write as common fraction in lowest terms: .075 = _____

The complement of an angle of 30° = _____

36

$4^3 =$ _____

$.25 \div 1\frac{1}{5} =$ _____

If a = 7, b = 3,
$a^2 + 3b =$ _____

$\frac{1}{4}\%$ of 60 = _____

66 sq. ft. = _____ sq. yd.

Solve: $\frac{7 - (6 + 8)}{2} =$ _____

Add: $-x - y - 23$, $x - y + 22$

43

Factor: $r^2 + 25 - 10r$

Ans. _____

$\frac{r^2 - 5r - 6}{r + 1}$

Ans. _____

Change to familiar numerals: M D C X C I = _____

Find interest on $1,200 at 6% for 70 days. Ans. _____

$3p - q = 10$
$2p - q = 7$
$p =$ _____
$q =$ _____

$\sqrt{2ax} = 6$

Ans. _____

$\frac{7}{17} = \frac{6}{x}$

$x =$ _____

51

Find square root: $\sqrt{67081}$

Ans. _____

$\log_{10}\left(\frac{1}{100}\right)$

Ans. _____

$\log_5 5\sqrt{5}$

Ans. _____

Reduce: $\frac{k^2 + k}{k^2} \cdot \frac{3k - 3}{k^2 - 1}$

Ans. _____

Find root: $2x^2 - 36x = 162$

Ans. _____

56

Arithmetic—Level II—Grade Norms. Percentiles and Standard Scores corresponding to grade rating and age may be found in Manual.

Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade
0	N.G.	7	K.6	13	3.0	21	6.5	28	8.5	35	12.3	42	15.0
1	P.K.2	8	1.0	14	3.4	22	6.7	29	9.0	36	12.8	43	16.0
2	P.K.3	9	1.5	15	3.9	23	6.9	30	9.3	37	13.3	44	17.1
3	P.K.4	10	1.9	16	4.3	24	7.1	31	10.1	38	13.8	45	17.5
4	K.0.2	11	2.3	17	5.2	25	7.4	32	10.8	39	14.4	46	18.4
5	K.0.3	12	2.9	19	6.1	26	7.7	33	11.3	40	14.9	47	18.9
6	K.0.4	13	3.3	20	6.3	27	8.0	34	11.8	41	15.4	48	19.5
												49	20.0

Percentiles and Standard Scores corresponding to grade rating and age may be found in the Manual.

Level I—Reading—Grade Norms.

Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade
1	N.5	16-17	Kg.6	36-37	1.9	53	3.3	66	5.3	79	8.1	92	12.9
2	N.8	18	Kg.7	38	2.0	54	3.5	67	5.5	80	8.4	93	13.3
3	Pk.1	19-20	Kg.8	39-40	2.1	55	3.6	68	5.7	81	8.7	94	13.7
4	Pk.2	21	Kg.9	41	2.2	56	3.8	69	5.9	82	9.0	95	14.1
5	Pk.4	22	Gr.1.0	42-43	2.3	57	3.9	70	6.1	83	9.3	96	14.5
6	Pk.5	23	1.1	44	2.4	58	4.1	71	6.3	84	9.7	97	14.9
7	Pk.7	24-25	1.2	45-46	2.5	59	4.2	72	6.5	85	10.1	98	15.4
8	Pk.9	26-27	1.3	47	2.6	60	4.4	73	6.7	86	10.5	99	15.8
9	Kg.1	28-29	1.4	48	2.7	61	4.5	74	6.8	87	10.9	100	16.2
10-11	Kg.2	30-31	1.5	49	2.8	62	4.7	75	7.0	88	11.3		
12	Kg.3	32-33	1.6	50	2.9	63	4.8	76	7.2	89	11.7		
13-14	Kg.4	34	1.7	51	3.0	64	5.0	77	7.5	90	12.1		
15	Kg.5	35	1.8	52	3.1	65	5.1	78	7.8	91	12.5		

Level II—Reading—Grade Norms

Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade
0	Pk.5	16	1.3	29	4.4	42	6.8	55	9.3	68	13.0	81	16.8
1	Pk.8	17	1.5	30	4.6	43	6.9	56	9.6	69	13.2	82	17.1
2	Kg.1	18	1.7	31	4.8	44	7.1	57	9.9	70	13.5	83	17.4
3-4	Kg.2	19	1.8	32	5.0	45	7.3	58	10.2	71	13.8	84	17.7
5-6	Kg.3	20	2.0	33	5.2	46	7.5	59	10.5	72	14.1	85	18.0
7	Kg.4	21	2.2	34	5.4	47	7.7	60	10.8	73	14.4	86	18.3
8	Kg.5	22	2.4	35	5.6	48	7.9	61	11.3	74	14.7	87	18.6
9	Kg.6	23	2.6	36	5.8	49	8.1	62	11.6	75	15.0	88	19.0
10-11	Kg.7	24	2.8	37	6.0	50	8.3	63	11.9	76	15.3	89	19.5
12	Kg.8	25	3.2	38	6.2	51	8.5	64	12.2	77	15.6		
13	Kg.9	26	3.5	39	6.3	52	8.7	65	12.4	78	15.9		
14	Gr.1.0	27	3.9	40	6.5	53	8.9	66	12.6	79	16.2		
15	1.1	28	4.2	41	6.6	54	9.1	67	12.8	80	16.5		

LEVEL 2

Two letters in name (2) A B O S E R T H P I U Z Q (13) 15

milk city in tree animal himself between chin split form 25

grunt stretch theory contagious grieve toughen aboard triumph 33

contemporary escape eliminate tranquillity conspiracy image ethics 40

deny rancid humiliate bibliography unanimous predatory alcove 47

scald mosaic municipal decisive contemptuous deteriorate stratagem 54

benign desolate protuberance prevalence regime irascible peculiarity 61

pugilist enigmatic predilection covetousness soliloquize longevity abysmal 68

ingratiating oligarchy coercion vehemence sepulcher emaciated evanescence 75

centrifugal subtlety beatify succinct regicidal schism ebullience 82

misogyny beneficent desuetude egregious heinous internecine synecdoche 89

LEVEL 1

cat see red to big work book eat was him how 36

then open letter jar deep even spell awake block size 46

weather should lip finger tray felt stalk cliff lame struck 56

approve plot huge quality sour imply humidity urge 64

bulk exhaust abuse collapse glutton clarify 70

recession threshold horizon residence participate quarantine 76

luxurious rescinded emphasis aeronautic intrigue repugnant 82

putative endeavor heresy discretionary persevere anomaly 88

rudimentary miscreant usurp novice audacious mitosis 94

seismograph spurious idiosyncrasy itinerary pseudonym aborigines 100

A R Z H I Q S E B O 10

Two letters in name (2) A B O S E R T H P I U Z Q 25

WISC RECORD FORM

NAME_____ AGE_____ SEX_____

ADDRESS_____

PARENT'S NAME_____

SCHOOL_____ GRADE_____

REFERRED BY_____

	Year	Month	Day
Date Tested			
Date of Birth			
Age			

	Scaled Score	IQ
Verbal Scale	____*	
Performance Scale	____*	
Full Scale		

*Prorated if necessary

NOTES

	Raw Score	Scaled Score
VERBAL TESTS		
Information		
Comprehension		
Arithmetic		
Similarities		
Vocabulary		
(Digit Span)		
Sum of Verbal Tests		
PERFORMANCE TESTS		
Picture Completion		
Picture Arrangement		
Block Design		
Object Assembly		
Coding		
(Mazes)		
Sum of Performance Tests		

_____
Examiner

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1. INFORMATION	Score 1 or 0		Score 1 or 0		Score 1 or 0
1. Ears		11. Season—Year		21. Pounds—Ton	
2. Finger		12. Color—Rubies		22. Capital—Greece	
3. Legs		13. Sun—Set		23. Turpentine	
4. Animal—Milk		14. Stomach		24. New York—Chicago	
5. Water—Boil		15. Oil—Float		25. Labor Day	
6. Store—Sugar		16. Romeo—Juliet		26. South Pole	
7. Pennies		17. Fourth—July		27. Barometer	
8. Days—Week		18. C.O.D.		28. Hieroglyphic	
9. Discoverer—America		19. American—Man		29. Genghis Khan	
10. Things—Dozen		20. Chile		30. Lien	

2. COMPREHENSION	Score 2, 1 or 0
1. Cut—Finger	
2. Lose—Balls (Dolls)	
3. Loaf—Bread	
4. Fight	
5. Train—Track	
6. House—Brick	
7. Criminals	
8. Women—Children	
9. Bills—Check	
10. Charity—Beggar	
11. Government—Examinations	
12. Cotton—Fiber	
13. Senators	
14. Promise—Kept	

3. ARITHMETIC			
Problem	Response	Time	Score 1 or 0
1. 45"			
2. 45"			
3. 45"			
4. 30"			
5. 30"			
6. 30"			
7. 30"			
8. 30"			
9. 30"			
10. 30"			
11. 30"			
12. 60"			
13. 30"			
14. 60"			
15. 120"			
16. 120"			

	Score 2 or 0	5. VOCABULARY 87
1. Bicycle		
2. Knife		
3. Hat		
4. Letter		
5. Umbrella		
	Score 2, 1 or 0	
6. Cushion		
7. Nail		
8. Donkey		
9. Fur		
10. Diamond		
11. Join		
12. Spade		
13. Sword		
14. Nuisance		
15. Brave		
16. Nonsense		
17. Hero		
18. Gamble		
19. Nitroglycerine		
20. Microscope		
21. Shilling		
22. Fable		
23. Belfry		
24. Espionage		
25. Stanza		
26. Seclude		
27. Spangle		
28. Hara-Kiri		
29. Recede		
30. Affliction		
31. Ballast		
32. Catacomb		
33. Imminent		
34. Mantis		
35. Vesper		
36. Aseptic		
37. Chattel		
38. Dilatory		
39. Flout		
40. Traduce		

	Score 1 or 0
1. Comb	
2. Table	
3. Fox	
4. Girl	
5. Cat	
6. Door	
7. Hand	
8. Card	
9. Scissors	
10. Coat	
11. Fish	
12. Screw	
13. Fly	
14. Rooster	
15. Profile	
16. Thermometer	
17. Hat	
18. Umbrella	
19. Cow	
20. House	

Arrangement		Time	Order	Score
A. Dog	75"	1 / 2		0 — 1 ABC — 2 ABC
B. Mother	75"			0 — 1 OYT — 2 TOY
C. Train	60"			0 — 1 IR ON — 2 IRON
D. Scale	45"			0 — 2 ABC
(Fight)				
1. Fire	45"			0 — 4 — 11-15: 5 — 6-10: 6 — 1-5: 7 — FIRE
2. Burglar	45"			0 — 4 — 11-15: 5 — 6-10: 6 — 1-5: 7 — THUG
3. Farmer	45"			0 — 4 — 11-15: 5 — 6-10: 6 — 1-5: 7 — QRST OR SQRT
4. Picnic	45"			0 — 4 — 11-15: 5 — 6-10: 6 — 1-5: 7 — EFGH OR EFHG
5. Sleeper	60"			0 — 4 — 16-20: 5 — 11-15: 6 — 1-10: 7 — PERCY
6. Gardener	75"			0 — 4 — 21-30: 5 — 16-20: 6 — 1-15: 7 — FISHER OR FSIHER
7. Rain	75"			0 2 MSTEAR ASTEMR — 4 — 21-30: 5 — 16-20: 6 — 1-15: 7 — MASTER

8. BLOCK DESIGN

Design	Time	Pass-Fail	Score
A. 45"	1		2
	2		0 1
B. 45"	1		2
	2		0 1
C. 45"	1		2
	2		0 1
1. 75"			0 — 21-75: 4 — 16-20: 5 — 11-15: 6 — 1-10: 7
2. 75"			0 — 21-75: 4 — 16-20: 5 — 11-15: 6 — 1-10: 7
3. 75"			0 — 26-75: 4 — 21-25: 5 — 16-20: 6 — 1-15: 7
4. 75"			0 — 21-75: 4 — 16-20: 5 — 11-15: 6 — 1-10: 7
5. 150"			0 — 66-150: 4 — 46-65: 5 — 26-45: 6 — 1-25: 7
6. 150"			0 — 91-150: 4 — 66-90: 5 — 46-65: 6 — 1-45: 7
7. 150"			0 — 91-150: 4 — 66-90: 5 — 46-65: 6 — 1-45: 7

9. OBJECT ASSEMBLY

Object	Time	Score
Manikin 120"		0 1 2 3 — 21-120: 4 — 16-20: 5 — 11-15: 6 — 1-10: 7
Horse 180"		0 1 2 3 4 5 — 31-180: 6 — 21-30: 7 — 16-20: 8 — 1-15: 9
Face 180"		0 1 2 3 4 5 — 71-180: 6 — 46-70: 7 — 26-45: 8 — 1-25: 9
Auto 180"		0 1 2 3 4 5 — 46-180: 6 — 31-45: 7 — 26-30: 8 — 1-25: 9

Notes:

NAME:_____D.O.B._____DATE: _____

INTRO: Now I will be showing you some pictures and asking you some questions. I just want you to try to do your best.

TASK A: These are pictures of Johnny when he's feeling different ways. I'm going to tell you some stories about Johnny and I want you to show me how you think Johnny feels in each story. I want you to point to the face that best shows how he feels. I don't want you to tell me anything; I want you to just point.

1. Show me how Johnny would feel if he got to eat his favourite food for supper.

_____

2. Show me how Johnny would feel if he was showing a good report card to his mother.

_____

3. Show me how Johnny would feel if his good friend came over and asked him to come out and play.

_____

4. Show me how Johnny would feel if he was given a badge for being the best baseball player on his team.

_____

5. Show me how Johnny would feel if he fell and hurt himself.

_____

6. Show me how Johnny would feel if someone he liked very much had to move away.

_____

7. Show me how Johnny would feel if everyone in his class got asked to Bobby's birthday party except him.

_____

8. Show me how Johnny would feel if he came home and his mother told him his pet cat had died.

_____

9. Show me how Johnny would feel if his mother just told him that she would take him to the circus.

_____

10. Show me how Johnny would feel if he just got a new toy as a birthday gift.

_____

11. Show me how Johnny would feel if he came home from school and found that his dog had had puppies while he was gone.

_____

12. Show me how Johnny would feel if he was walking through the woods and suddenly saw a beautiful butterfly.

_____

13. Show me how Johnny would feel if his mother told him to eat some food that he really didn't like.

_____

14. Show me how Johnny would feel if his brother took his toy truck and smashed it all to pieces.

_____

15. Show me how Johnny would feel if he went into the kitchen and smelled something rotten.

_____

16. Show me how Johnny would feel if one of the boys in the schoolyard started a fight with him.

_____

Now, can you tell me how Johnny feels in each picture? How does Johnny feel in this picture (examiner points to each picture)? B_1_____ B_2_____ T_1_____ T_2_____ B_3_____ T_3_____

1. You said that Johnny would feel this way (points to S's response) if he got to eat his favourite food for dinner.

   What is that feeling? _____
   Why do you think he would feel that way? _____
   _____

   Could he feel this way (points to angry face) in this situation? _____
   Why (not)? _____
   _____

5. You said that Johnny would feel this way (points to S's response) if he fell and hurt himself.

   What is that feeling? _____
   Why do you think he would feel that way? _____
   _____

   Could he feel this way (points to happy face) in this situation? _____
   Why (not)? _____
   _____

9. You said that Johnny would feel this way (points to S's response) if his mother just told him she would take him to the circus.

   What is that feeling? _____
   Why do you think he would feel that way? _____
   _____

   Could he feel this way (points to sad face) in this situation? _____
   Why (not)? _____
   _____

13. You said that Johnny would feel this way (points to S's response) if his mother told him to eat some food that he really didn't like.

   What is that feeling? _____
   Why do you think he would feel that way? _____
   _____

   Could he feel this way (points to surprised face) in this situation? _____
   Why (not)? _____
   _____

TASK B: These are pictures of children trying to say something with their hand. I'm going to read you stories about different boys, but I won't tell you what happens at the very end of the story. I want you to guess. I want you to point to the picture that shows what the boy might be doing at the end of the story.

1. When Ron's mother left to go shopping she told him to stay at home and babysit his younger brother, Michael. Michael was upstairs and started throwing his toys around the room like he wasn't supposed to do. Ron went upstairs. Show me what Ron might do. Point to the picture that shows what Ron might do. _____

2. Paul was in a Grade 4 class. One day his teacher asked him to help another boy called Bobby with his spelling assignment. Bobby made a big mistake. Show me what Paul might do. Point to the picture that shows what Paul might do.

_____

3. Bill was walking home from school one day when some younger children on the street started calling him names and throwing stones at him. Show me what Bill might do. Point to the picture that shows what Bill might do.

_____

4. Tony was in his living room playing when he heard a lot of noise outside. He looked out the window and saw that some boys were punching his younger sister Joan. He ran out of the house. Show me what Tony might do. Point to the picture that shows what Tony might do.

_____

5. Peter was inside his house watching TV. He wanted to go outside and play. He heard some boys that he liked from school walking by his house, and he ran to open the front door. Show me what Peter might do. Point to the picture that shows what Peter might do.

_____

6. Gerry was playing soccer on his school team. One time his father came to watch the game and Gerry was really happy. He wanted to be sure his father noticed where he was on the field. Show me what Gerry might do. Point to the picture that shows what Gerry might do.

_____

Now I want you to tell me what each of the boys in these pictures is saying.

T_1_____ B_1_____

T_2_____ B_2_____

T_3_____ B_3_____

TASK C: I'm going to tell you a story about this picture. After I tell you, I want you to find the face that shows how this boy feels (examiner points) and then put the face on the picture.

1. Bobby was walking home from school with his sister Jane. All of a sudden Bill ran up and started punching Bobby and calling him names. Bobby started pushing Bill and fighting back. Show me how Bobby would feel. Pick up the face that shows how Bobby would feel, and put it on the picture. _____

2. One day John, Mike and Doug were playing beside their school. Mike had stolen some matches and a cigarette from his home. He tried to light the cigarette, and threw the match into the grass. The grass started burning and the boys tried to run away. Show me how Mike would feel. Pick up the face that shows how Mike would feel, and put it on the picture. _____

3. Jim and his friends were standing in the park talking after playing a baseball game. Tony and his family had just moved to the neighbourhood, and Tony didn't have any friends. Tony asked him if he could play baseball with the boys. Jim looked at him and said "No". Show me how Tony would feel. Pick up the face that shows how Tony would feel, and put it on the picture. _____

4. Marty was the captain of the neighbourhood baseball team. His team had practiced hard all summer. Today they played the final game in the tournament, and Marty's team came out in first place. Show me how Marty would feel. Pick up the face that shows how Marty would feel, and put it on the picture. _____

TASK D: I want you to look at this picture for a few minutes, and think about what might be happening in the picture. Then I'll ask you some questions.

1. What is he doing? _____
_____

What is he feeling? _____
Why? _____

2. What is he doing? _____
_____

What is he feeling? _____
Why? _____

3. What is she doing? _____
_____

What is she feeling? _____
Why? _____

Now I want you to look at this picture for a few minutes, and think about what might be happening in the picture. Then I'll ask you some questions.

4. What is he doing? _____
_____

What is he feeling? _____
Why? _____

5. What is he doing? _____

_____

What is he feeling? _____
Why? _____

6. What is she doing? _____

_____

What is she feeling? _____
Why? _____

APPENDIX F

DATA SUMMARY SHEET

OZOLS THESIS SUMMARY SHEET

NAME: _____ D.O.B._____ SEX: _____ GRP.: _____

ADDRESS: _____ TEL: _____

Handedness: _____ Second language: _____

Emot. Dist. _____

NEURO INFO:

File No.: _____ File No.: _____

Date of Testing: _____ Date of Testing: _____

C.A.: _____ C.A.: _____

WRAT Reading ____(Gr.)____(%) WRAT Reading ____(Gr.)____(%)
Spelling ____(Gr.)____(%) Spelling ____(Gr.)____(%)
Arithmetic ____(Gr.)____(%) Arithmetic ____(Gr.)____(%)

WISC Comp. _____ WISC Comp. _____
Arith. _____ Arith. _____
Vocab. _____ Vocab. _____
PicArr. _____ PicArr. _____
ObjAss. _____ ObjAss. _____

PRORATED WISC VIQ: _____ WISC VIQ: _____
PIQ: _____ PIQ: _____
FSIQ: _____ FSIQ: _____

Target Test: _____ TPT Loc.: _____

TPT Both: _____ TPT Left: _____

Report: _____

SOCIAL SENSITIVITY TASKS:

TASK A: _____

TASK B: _____

TASK C: _____

TASK D : _____

TASK E .: _____

TOTAL: _____

Comments: _____

Feedback: _____

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